

Technical Manual

(NetSafe-DVR)



1. Installation of NetSafe DVR	4
1.1. Safety Information	4
1.2. Removing Package	6
1.3. Rear Panel of System	7
1.4. Camera 75Ohm Terminator	8
1.5. How to connect to PAN/TILT Camera	9
1.6. How to connect to PSTN, ISDN, Leased line & LAN	10
1.7. Connecting Outer Sensor	11
2. Installation Guide	12
2.1. CMOS Setup(P3)	12
2.1.1 Standard CMOS features	13
2.1.2 Advanced BIOS feature	14
2.1.3 Advanced Chipset Features	15
2.1.4 Integrated Peripherals	16
2.1.5 Power management Setup	18
2.1.6 PnP/PCI Configuration Setup	19
2.1.7 PC Health Status	20
2.1.8 Frequency/Voltage Control	21
2.1.9 Save & Exit Setup	22
2.1.10 Exit Without Saving	23
2.2. CMOS Setup(P4)	24
2.2.1 Standard CMOS features	25
2.2.2 BIOS Features Setup	26
2.2.3 Chipset Features Setup	27
2.2.4 PnP/PCI Configuration Setup	28
2.2.5 Integrated Peripherals	29
2.2.6 Hardware Monitor Setup	30
2.2.7 Supervisor/User Password	31
2.2.8 Save & Exit Setup	32
2.2.9 Exit Without Saving	33
2.3. NetSafe-DVR Setting	34
2.4. NetSafe-DVR partition Setting	41
2.5. Install & Reinstall NetSafe-DVR Program	54

3. System Algorithm	64
3.1 System Data Flow	64
3.2 Image Processing Board	65
4. Backup Storage Setting	69
4.1 IEEE-1394 Backup Media	69
4.1.1 IEEE-1394 System Architecture	69
4.1.2 IEEE-1394 HDD & Cable Connect to NetSafe-DVR System	70
4.1.3 IEEE-1394 HDD Setting for WIndows98SE	70
4.2 DVD-RAM Backup Media	74
4.2.1 DVD-RAM Specification	74
4.2.2 DVD-RAM Test	75
4.2.3 DVD-RAM Backup Test	76
5. Make a Dial up Connection	78

1. Installation of NetSafe DVR

This manual includes details on

**Appearance and name of NetSafe DVR,
how to connect PAN/TILT control with related tools
and how to setup the program of system.**

If you are First user of NetSafe DVR, even though you are experienced with similar products like this, we recommend you read this manual carefully and follow the instructions inside before using this product.

Before using NetSafe DVR, you should contact where you purchased and get a support, in case you open the cover for upgrading of system or repair. If you have any questions or problem, contact where you purchased.

1.1. Safety Information

- Before installation, be sure to turn off the power of NetSafe DVR.
- Do not open the cover of product at your disposal.
- Install the product to a well-ventilated area.
- Keep about 20 Cm distance with other products.
- Do not install the product where extreme electronic wave or magnetism exit.
- If the product is installed near the wireless devices like radio or TV, it may cause interference.
- Do not expose the product directly to the sun or heating apparatus.
- Do not expose the product to rain, extremely humid or dirt environment. It might cause malfunction of System. Install dehumidifier and use compressed air for cleaning filter every 3 months. Cleaning every fan, major parts of system inside.
- Re-insert front filter after Cleaning & drying it every 3 months.
- Keep the product away from tremor or any magnetic devices.
- Do not install the product to extremely cold area.
- Pay attention not to slip an electronic conductor into the groove of the product for ventilation.

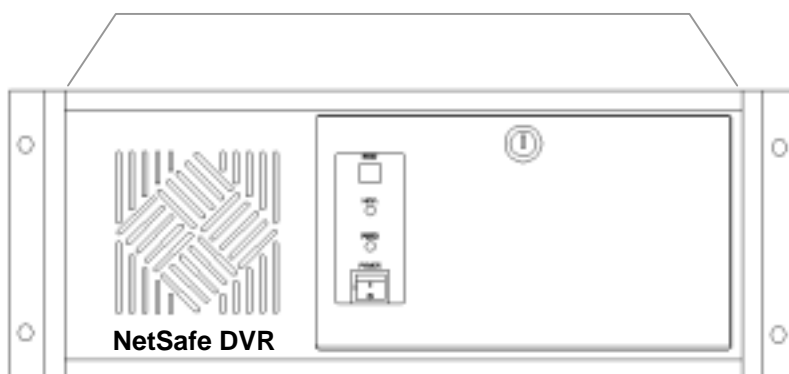
- Correctly adjust the input voltage switch of power supply according to your environment.
- Use stable Transformer to protect malfunction of system, where expected unstable power supply.
- When you install, put another support for BNC cable, not to damage BNC Board. it might be damaged by the weight of BNC cable.

1.2. Removing Package

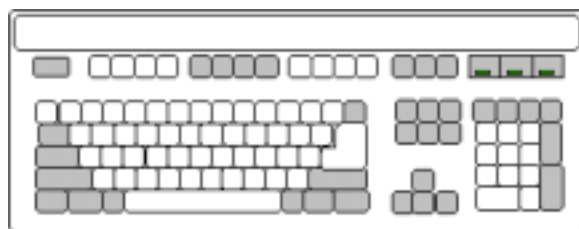
After removing NetSafe DVR package , place NetSafe DVR where you want to install.
(Read carefully safety information before installation)

Make sure that the following contents before start install.

- Body (NetSafe DVR)
- A power supply cable
- User's Manual
- Keyboard, Mouse
- Case accessory Box
- Microsoft Windows 2000 License
- Communication conversion cable(Receiver connecting cable)



Body (NetSafe DVR)



Keyboard

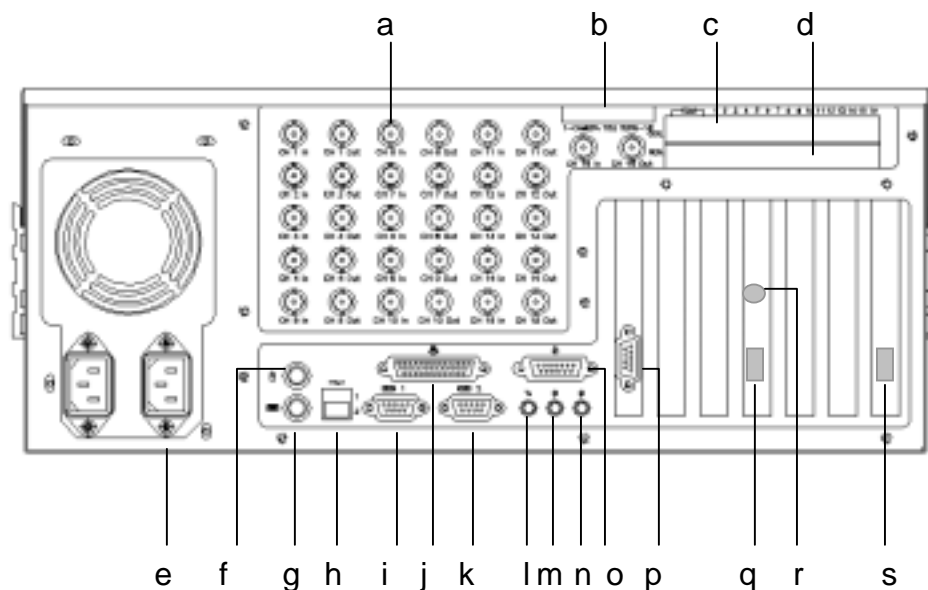


Mouse



Power supply Cable (for AC)

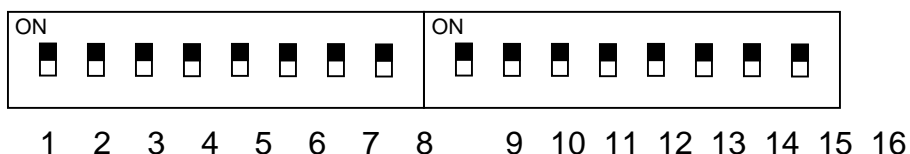
1.3. Rear Panel of System



- a. Camera Input (CH1~CH16) / Output (CH1~CH16)
- b. Camera 75Ohm Terminator
- c. Control Output (Com:4port, Control:16port)
- d. Sensor Input (Com:4port, Sensor:16port)
- e. AC Power Input (AC 110 ~ 220V)
- f. PS/2 Mouse Port
- g. PS/2 Keyboard Port
- h. USB Port
- i. Com A Serial Port
- j. LPT(Printer) Port
- k. Com B Serial Port
- l. Line Out 1
- m. Line In / Line Out2
- n. MIC In
- o. Game Port
- p. VGA Out
- q. TV Out (Composite Out)
- r. RS422/485 (RX Connection Port)
- s. LAN Port

1.4. Camera 75 Ohm Terminator

This system can be connected to CCTV 16 channel input with one by one Loopback.
Use output port of each channel.



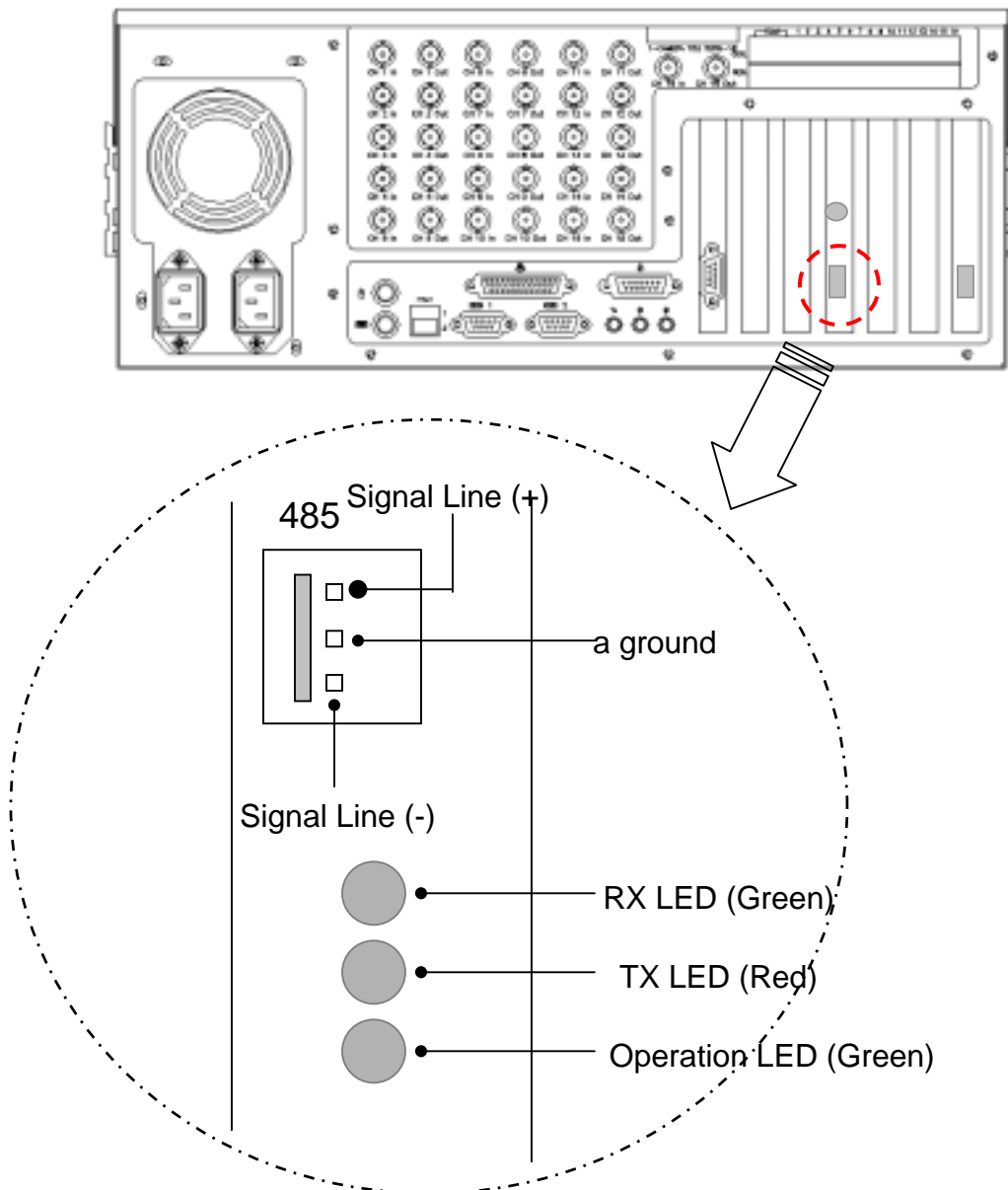
All the channels set as 'On', when it is released from warehouse.

Set 'On' all the channels when you don't use CCTV.

About the channels which will be used by CCTV, set the switch 'Off' like above picture.

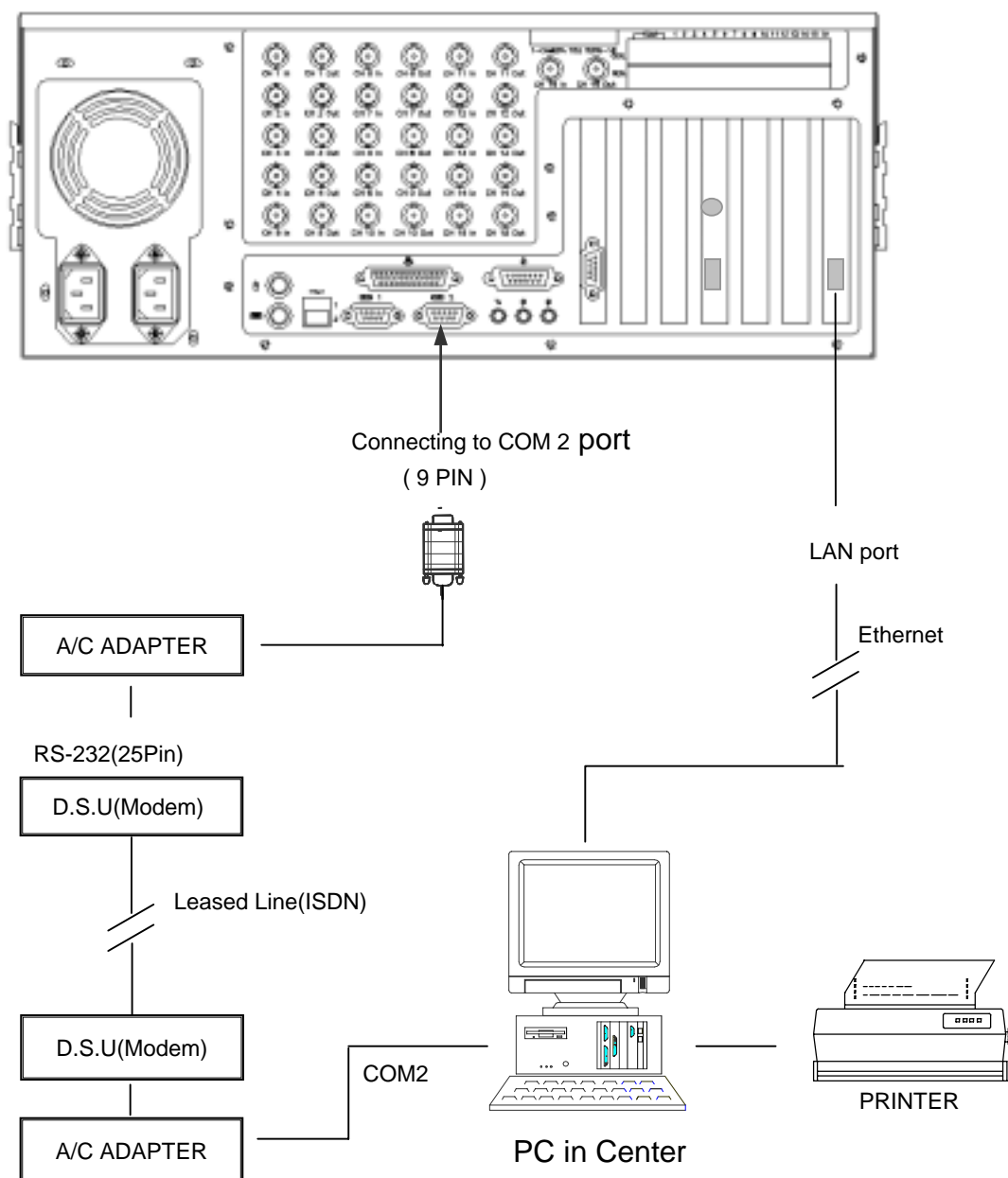
Turn the switch 'On' when you don't use CCTV.

1.4. How to Connect to PAN/TILT Camera

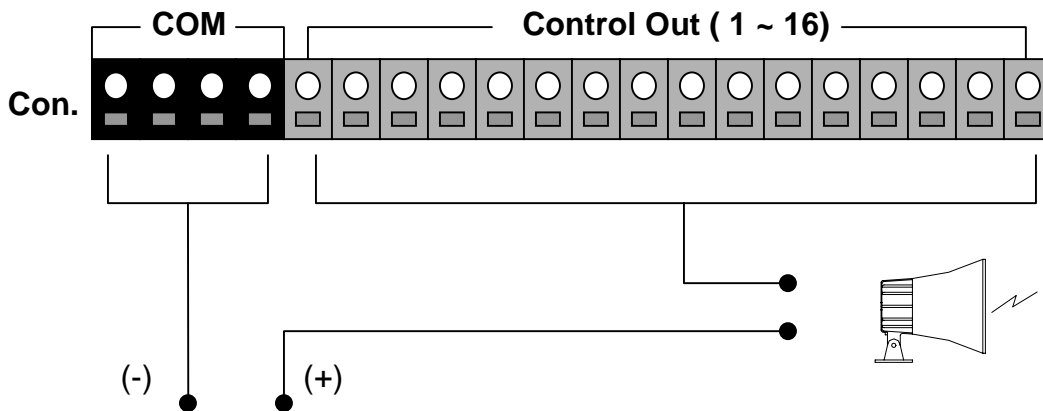


- Connect to PAN/TILT Receiver (RS-485 Signal line)
- Only when Operation LED is 'On' state, image appears normally.
- Caution : When connect, pay attention (+), (-) polarity of signal line

1.5. How to Connect to PSTN, ISDN, Leased line & LAN



1.6. Connecting Control Output



External Power Supply (DC 12V)

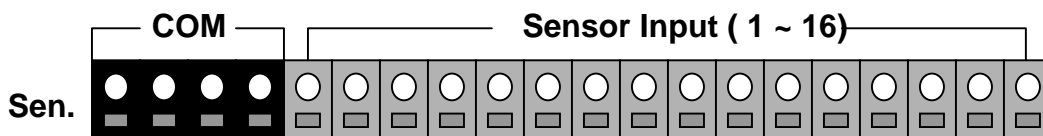
Siren, Alarm, Outside relay

When it is controlled automatically or activated by motion or sensor, control output port (You can control at “Settings – Sensor & Output Setup”) connect to the “COM” port .

- Maintained “NO(Normal Open)” at normal time.
- Maintained “NC(Normal Close)” at control output Time.

Only use below 12V, 300mA voltage. When you control electric lamp and other devices, use another outer relay control.

1.7. Connecting Outer Sensor



Connect one signal line of all kind of sensor(infrared rays sensor, thermic rays sensor, Magnetic sensor) to the com port of the body and connect another signal line to the desired sensor number.

- Set the type of sensor at “Sensor & Output Setup”.

Use another adapter(Power Supply) for the all sorts of sensor’s power supply.

2. Installation Guide

This chapter explains a proper activation of NetSafe DVR, how to add HDD and other basic system setup.

2.1. CMOS Setup

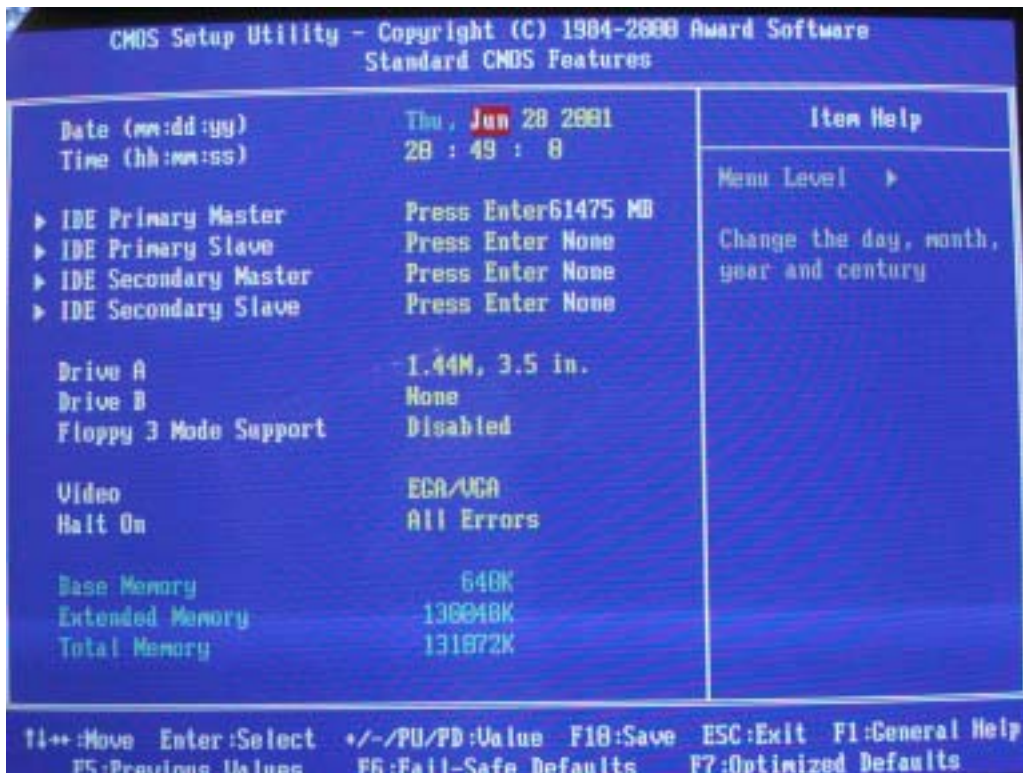


Initial screen of CMOS Setup

To see the screen like above, turn it on the NetSafe-DVR Power Switch then 'Del' key on keyboard. After a seconds, initial CMOS setup screen be displayed like figure {2-1}, Select 'Load Optimized Defaults' out of menu. This sets your system basically optimized status. On your optimized system, set the function as following pictures.

2.1.1. Standard CMOS Features

Set the basic information of HDD.



Standard CMOS Features

* Primary Master / Primary Slave, Secondary Master / Secondary Slave

Can use 4 IDE type HDD. Because it delivered 1 HDD from warehouse

Except Primary Master, rest of HDD type is set "None".

To add additional HDD set "Auto" type then when your PC reboots, HDD sets automatically.

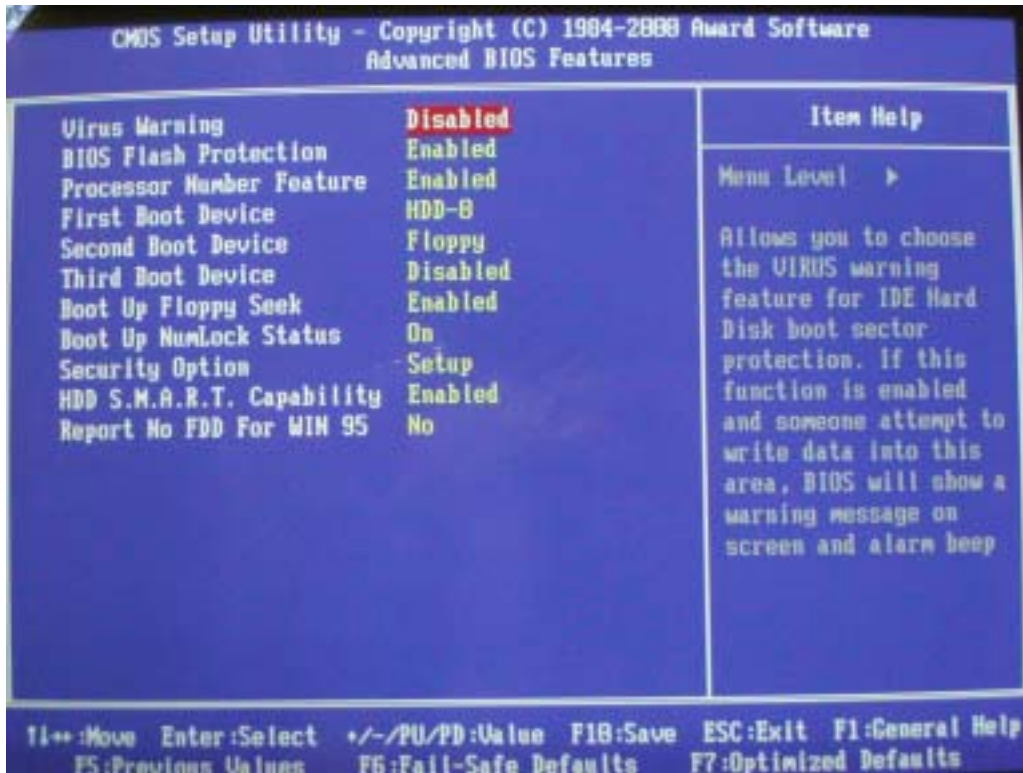
* Halt On

Set when your system will be halt on if it detects unexpected error.

- All Errors : System will be halt on every kind of error.

2.1.2. Advanced BIOS Features

Set the function of advanced BIOS.



Advanced BIOS Features

* BIOS Flash Protection

Set write protect on Flash BIOS.

* First / Second / Third Boot Device

Set the order of booting disk.

* HDD S.M.A.R.T. Capability

S.M.A.R.T. (Self Monitoring, Analysis, Reporting Technology) has the function of keeping the most suitable status of DATA with watching and analyzing the System.

2.1.3. Advanced Chipset Features

Set the advanced chipset function.

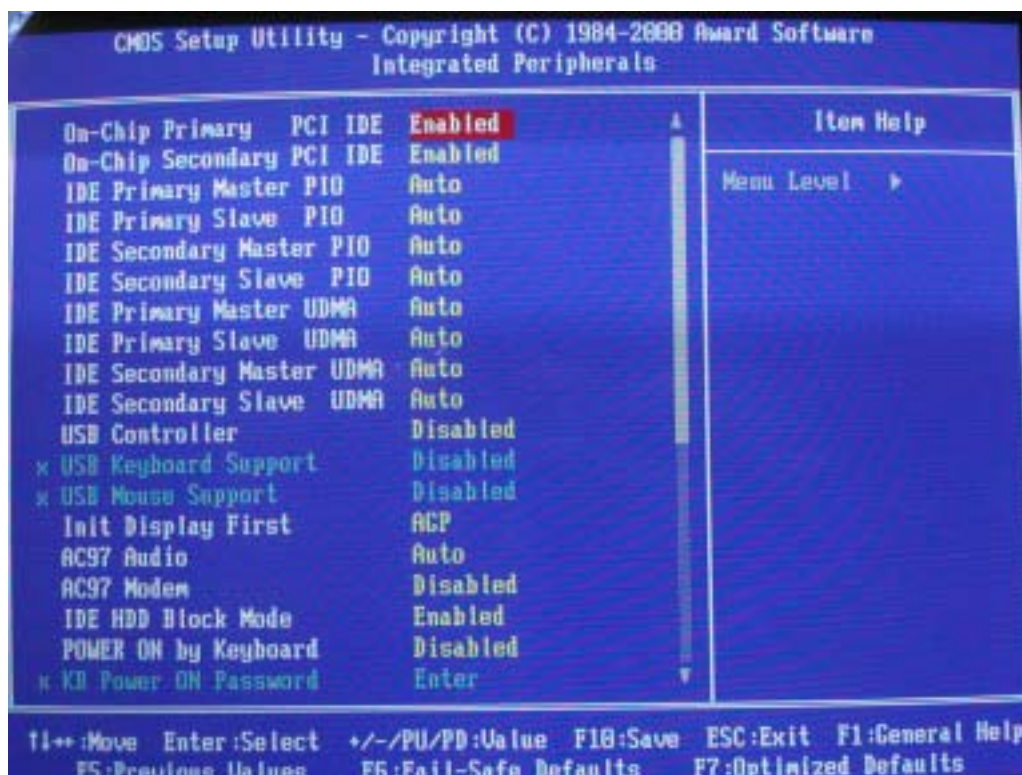


Advanced Chipset Features

Keep the default value on this menu.

2.1.4. Integrated Peripherals

Set the formation of IDE and other peripherals.



Integrated Peripherals

* USB Controller

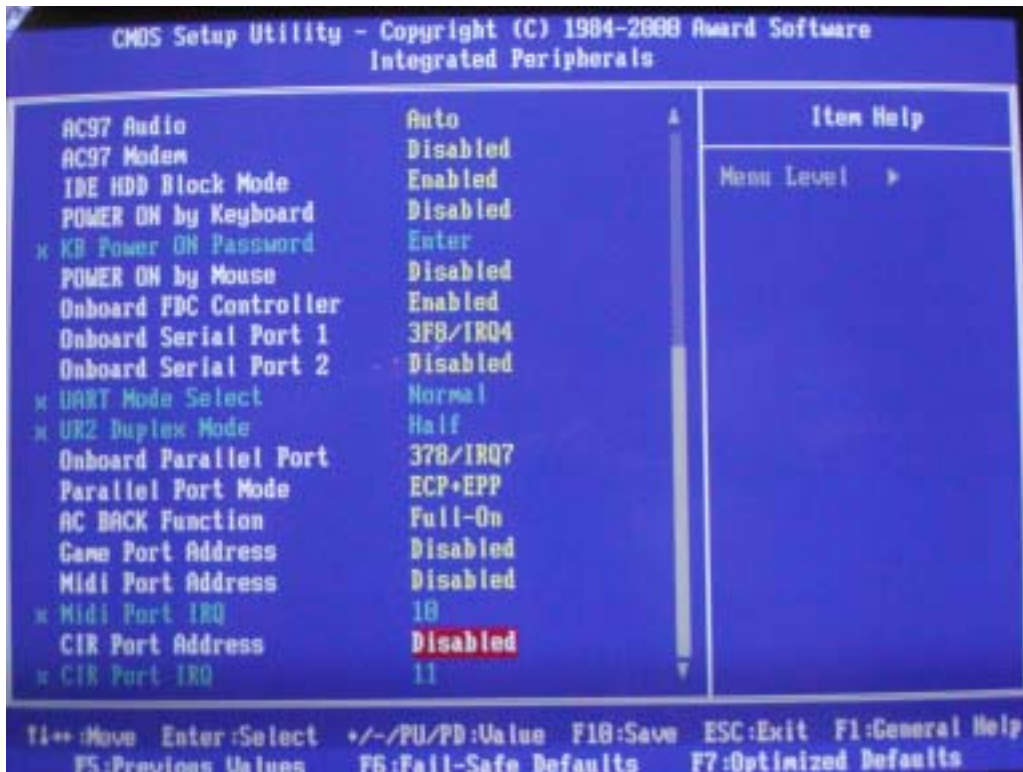
Select whether you use USB controller or not.

* Init Display First

Select pre-selected slot when you use AGP, PCI, ISA and ISA VGA Card together on your system.

* AC97 Modem

Select whether you use built-in modem card or not.



Integrated Peripherals

* Onboard Serial Port 1 / 2

Set the address of built-in serial port manually or automatically.

* Onboard Parallel Port

Set the address of built-in parallel port manually or automatically.

* Parallel Port Mode

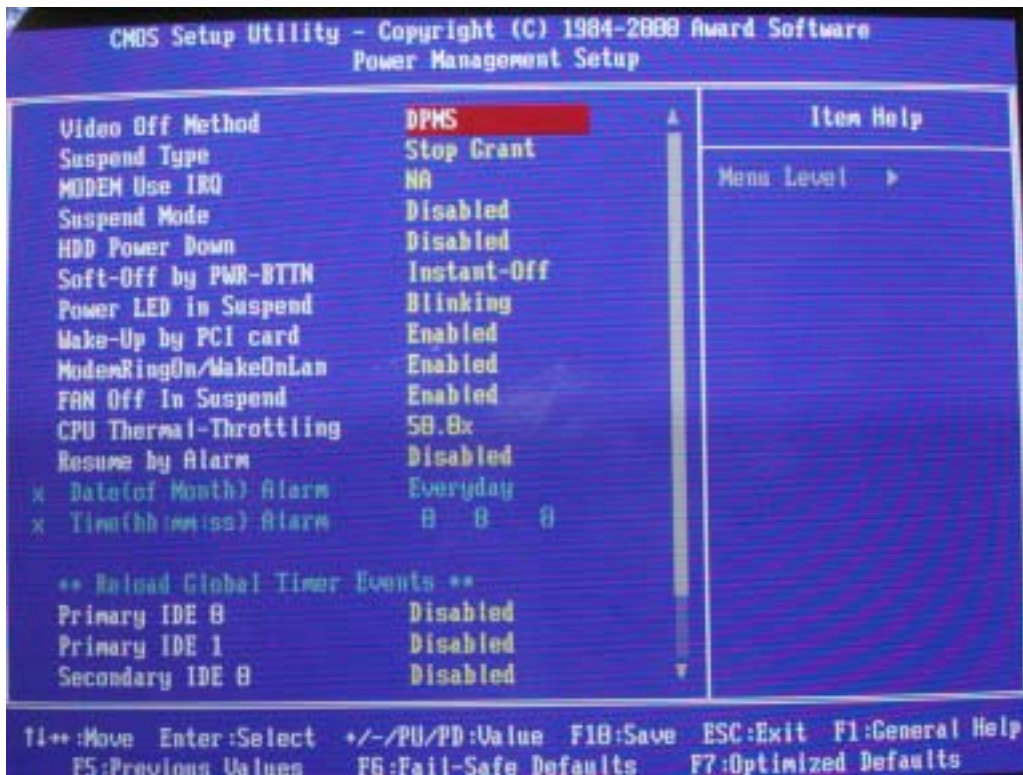
Set the port of printer.

* AC Back Function

Select the power on/off and last status when a power supplies again after power failure.

2.1.5. Power Management Setup

Set the power management of System.



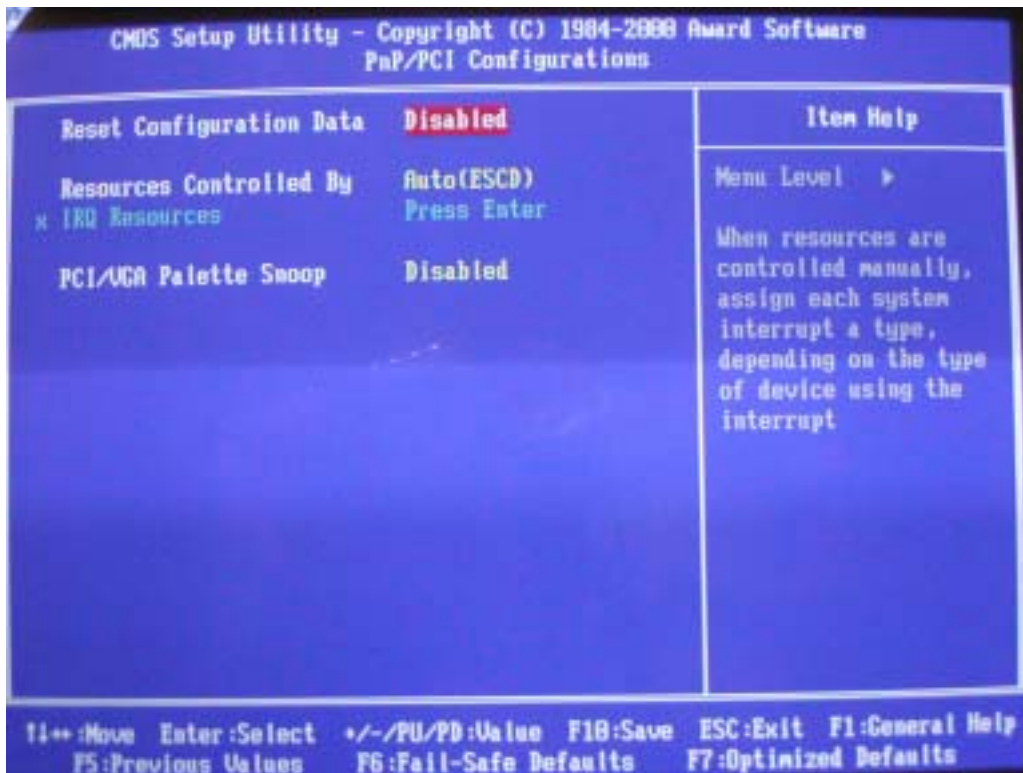
Integrated Peripherals

* Modem Use IRQ

Set the IRQ for modem.

2.1.6. PnP/PCI Configuration Setup

Set the value of IRQ of PCI, ISA devices.



PnP/PCI Configuration Setup

Keep the default value on this menu.

2.1.7. PC Health Status

Shows the inside of PC hardware.

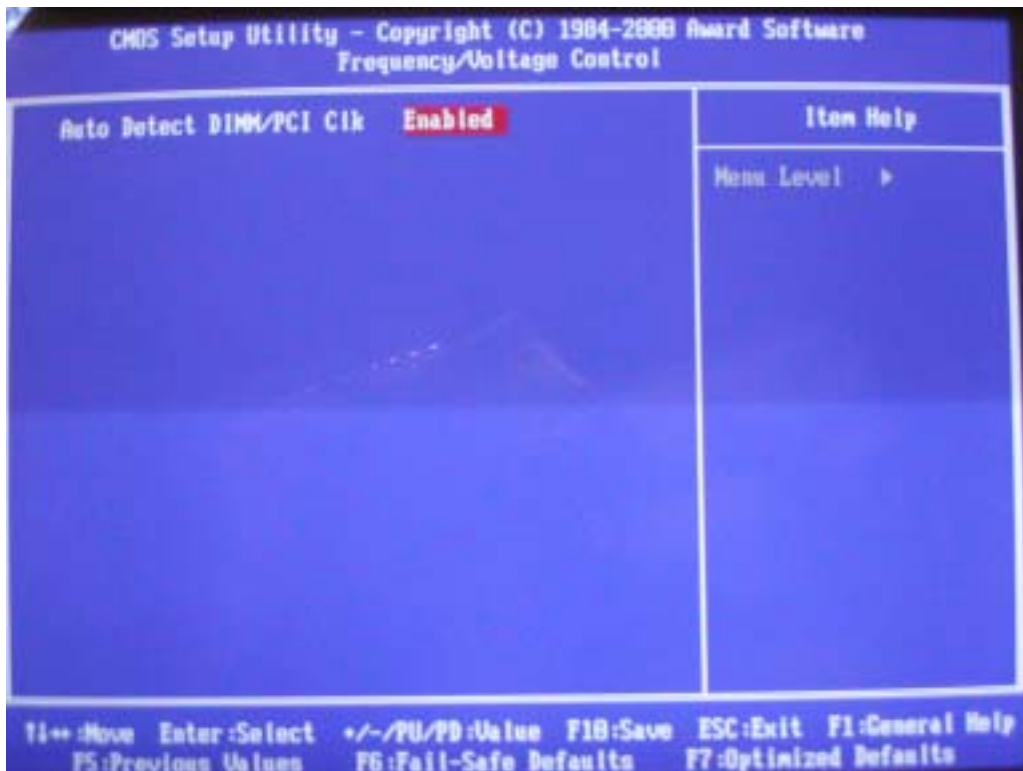


PC Health Status

Keep the default value on this menu.

2.1.8. Frequency / Voltage Control

Set the Ratio of CPU.

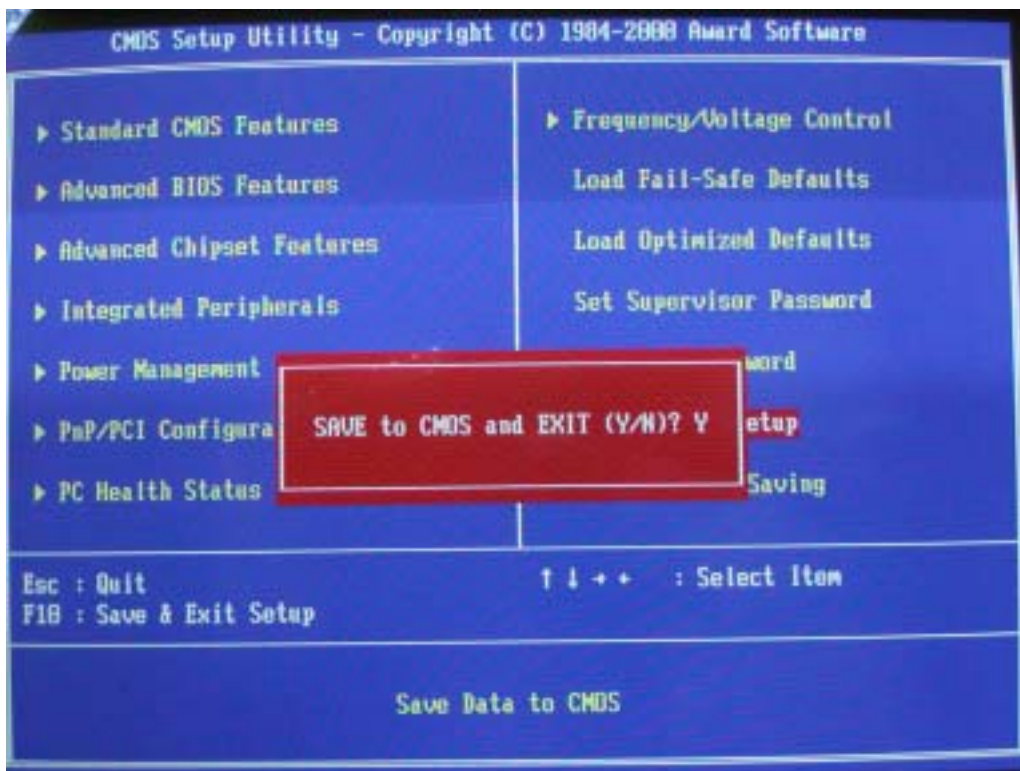


Frequency/Voltage Control

- * **Auto Detect DIMM/PCI Clk**
Set DIMM/PCI Clk automatically.

2.1.9. Save & Exit Setup

Save the changed value, exit Setup program.



Save & Exit Setup

2.1.10. Exit Without Saving

Exit Setup program without Saving.



Exit Without Saving

2.2. CMOS Setup(Pentium-4)

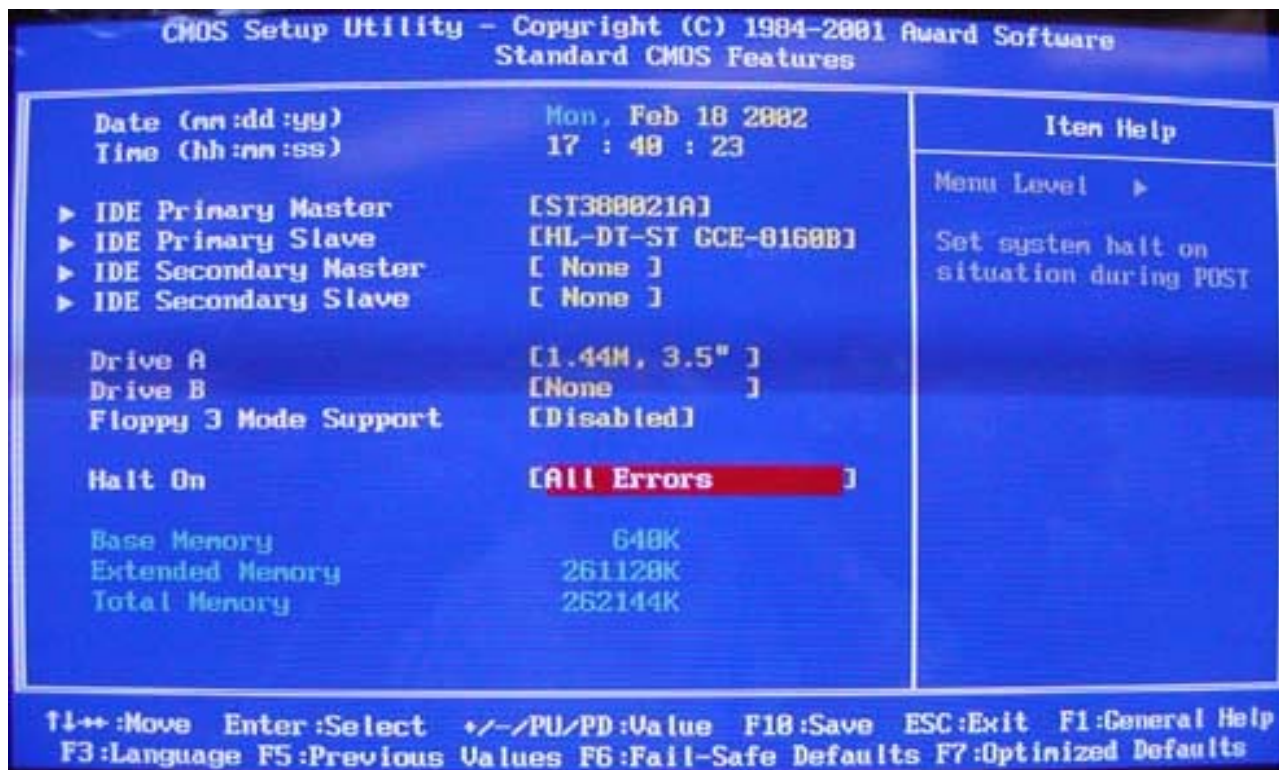


Initial CMOS Setup

Power on NetSafe-DVR and press DEL key for CMOS setup screen like [Figure 2-2-1]. Select 'Load Optimized Defaults' on the menu. Performing this function makes your system as optimized setting. Set your system function properly on basically optimized state. Set the function as following steps.

2.2.1. Standard CMOS Features

General H/W setup.



Standard CMOS SETUP

* Primary Master / Primary Slave, Secondary Master / Secondary Slave

4 additional HDD(IDE type) available.

Because 1 HDD installed in your system, rest HDD set as 'NONE' except Primary Master. Additional HDD will be automatically added when you system boots. To do this, set the rest of HDD type as 'Auto'.

* Halt on

Check Halt on menu as 'All errors'.

2.2.2. BIOS Features SETUP

Set advanced BIOS function



BIOS Features SETUP

* 1st / 2nd / 3rd Boot Device

Set the order for booting devices

* Interrupt Mode

PIC : minimize interrupt and error

Set interrupt mode as 'PIC'

* HDD S.M.A.R.T. Capability

S.M.A.R.T. (Self Monitoring, Analysis, Reporting Technology) has the function that HDD analyze status of system and keep the best data keeping condition.

* Full Screen Logo show

check whether you want to show logo screen when system boots.

set this menu as 'Disable'

2.2.3. Advanced Chipset Features SETUP

Set advanced Chipset function

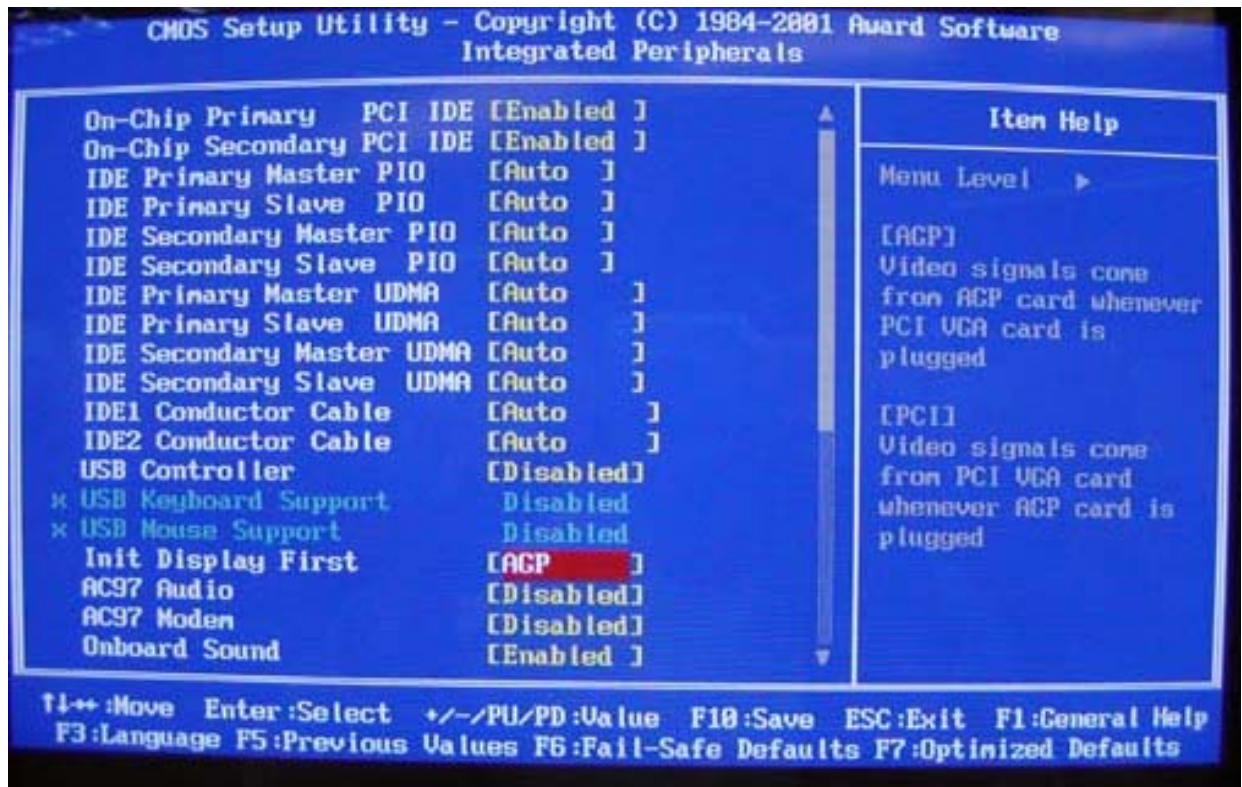


Advanced Chipset Features SETUP

* Leave this setup as default.

2.2.4. Integrated Peripherals

Set IDE & peripheral devices.



Integrated Peripherals

* USB Controller

Check whether you use USB port or not.
Set 'Disable'.

* Init Display First

In case of onboard VGA system, you don't need to select this. But in this system you should select 'AGP' type.

* AC97 Audio

Check whether you will use on board sound.
Set 'Disable'

* AC97 Modem

Check whether you will use on board modem.
Set 'Disable'

2.2.5. Integrated Peripherals



Integrated Peripherals

* Onboard Serial Port 1 / 2

Set the address of serial port manually or automatically.
Set Onboard Serial Port 2 as 'Disabled'.

* Parallel Port Mode

Set the address of parallel port manually or automatically.
Set the printer mode..
Set Parallel Port Mode as **[ECP+EPP]**.

* AC Back Function

When there is irregular power shut down, it memorizes last status and work.
Set AC Back Function as 'Memory'.

2.2.6. Power Management Setup



Power Management Setup

* Modem Use IRQ

Set IRQ which you will use Modem.

Set this menu as [NA]

* Soft – off by PWR – BTTN

Delay 4 Sec – In case of system is working, it turns soft-off with pressing power button for 4 sec.

2.2.7. PnP/PCI Configuration Setup

Set the value of IRQ PCI, ISA devices.



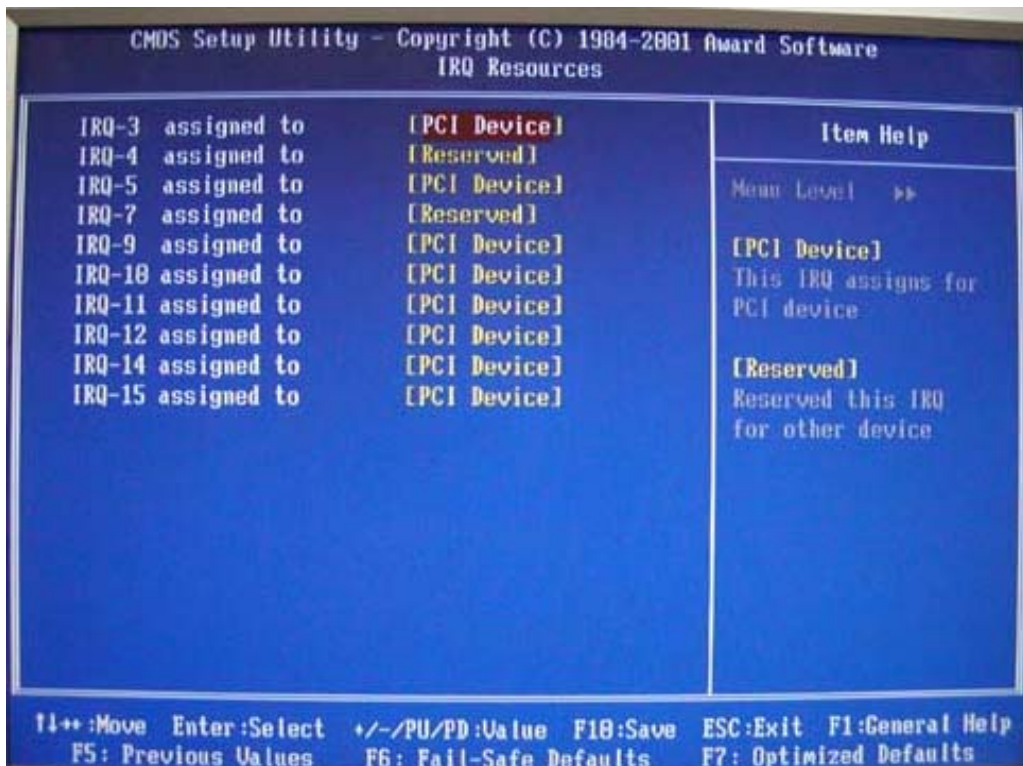
PnP/PCI Configuration Setup

This field enables management of PnP compatible devices. When you set 'Auto', IRQ & DMA bios will be set automatically. When you set 'Controlled by', dialog will appear like above picture. Set 'Manual'.



PnP/PCI Configuration Setup

If you set 'Manual' in **Resources Controlled By**, user can adjust IRQ Resources.
Select 'Press Enter'.



PnP/PCI Configuration Setup

To protect error, set IRQ 4 & 7 as 'Reserved'.

* PC Health Status & Frequency / Voltage Control

Follow default settings.

2.2.8. Save & Exit Setup

Save changed value and exit CMOS.



Save & Exit Setup

Select 'Save & exit' or press F10 key, then type 'y' and press enter. CMOS setup is completed.

2.3. NetSafe-DVR Setting

1. Insert **Windows2000 Professional Bootable CD** and follow the instruction.

- Boot with CD -> partition of 'C' root : 3GB, file system : NTFS

2. Install Driver

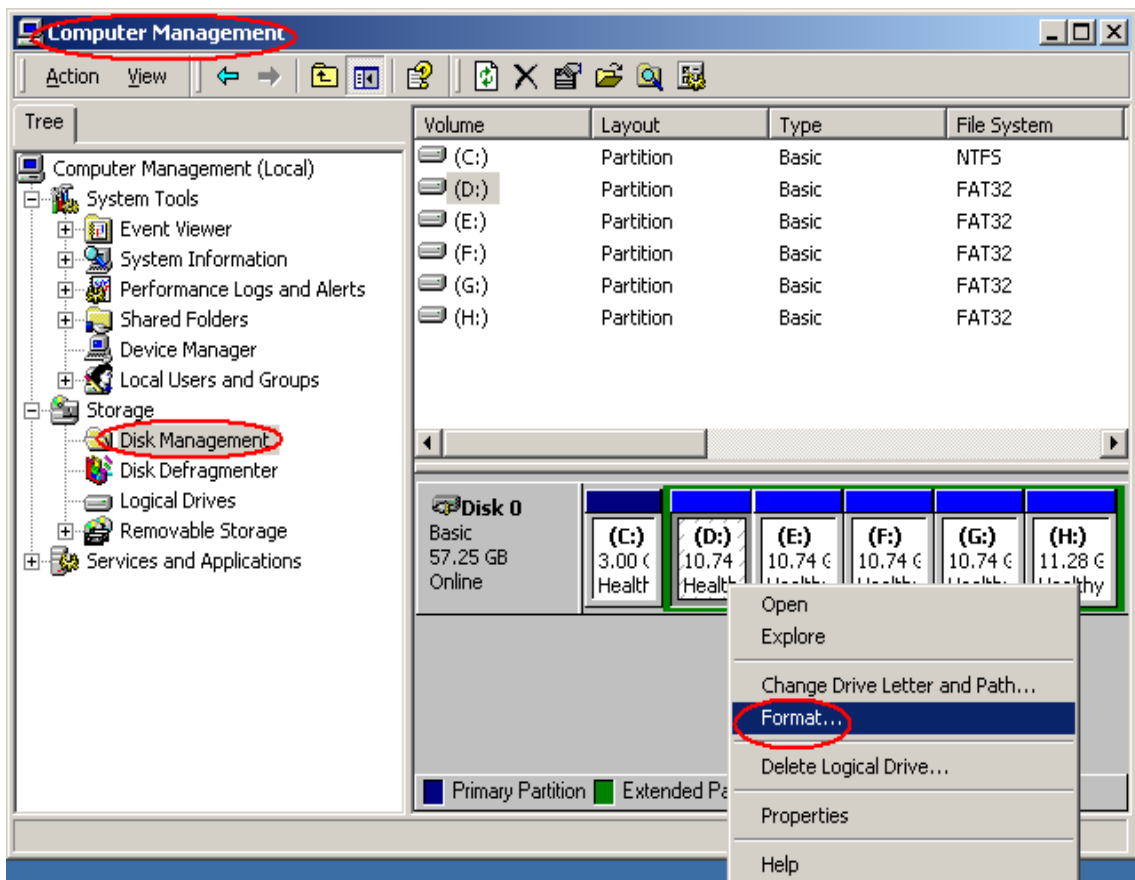
- Set VGA Card, Sound Card, Capture board etc. driver. (saved at C:\Backup)

3. Set HDD partition (file system : FAT32)

* See the 2.4 Partition Setting

- computer management -> storage -> disk management

Set as Extended drive -> Make 5 partitions as logical drive and format them.



4. Change default setting of Windows

- a. Click right mouse button on Desktop screen and select properties -> display properties
-> setting -> colors(True Color(32bit)), screen area(1024X768).
- b. Change the detail option of 'Power options properties' like a following pictures.

Set Screen Saver as 'None'.

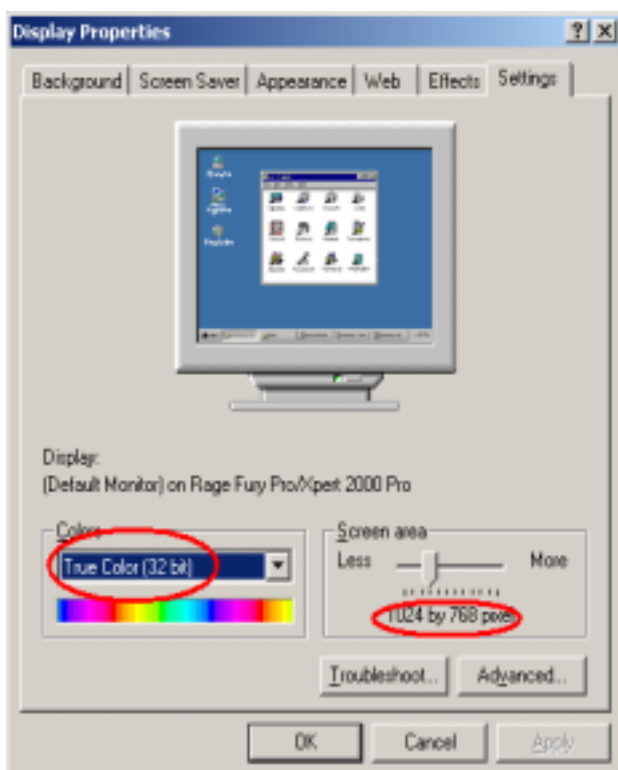


Figure 2-3-1

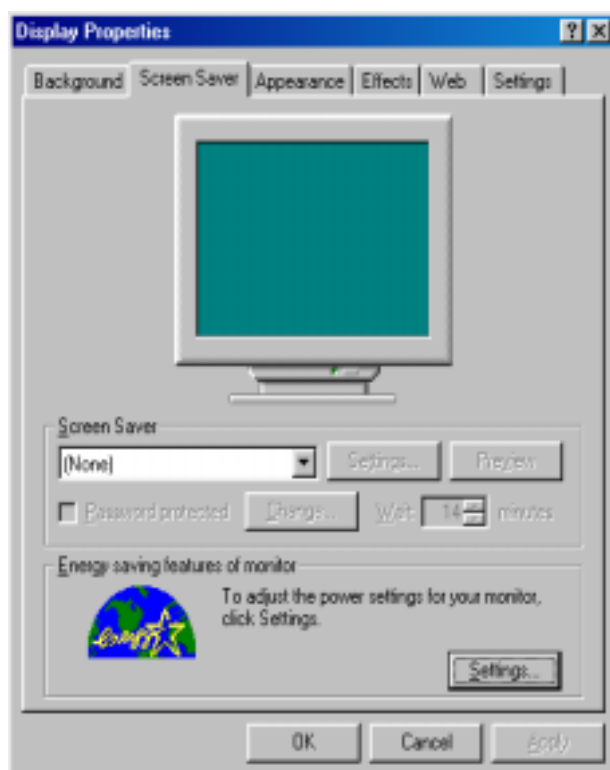


Figure 2-3-2



Click 'Setting' button on 'Screen Saver' tab menu and then following picture appears. Set every field like a picture. If you don't set like a picture, system might goes to power saving mode and nothing would be displayed on the screen.

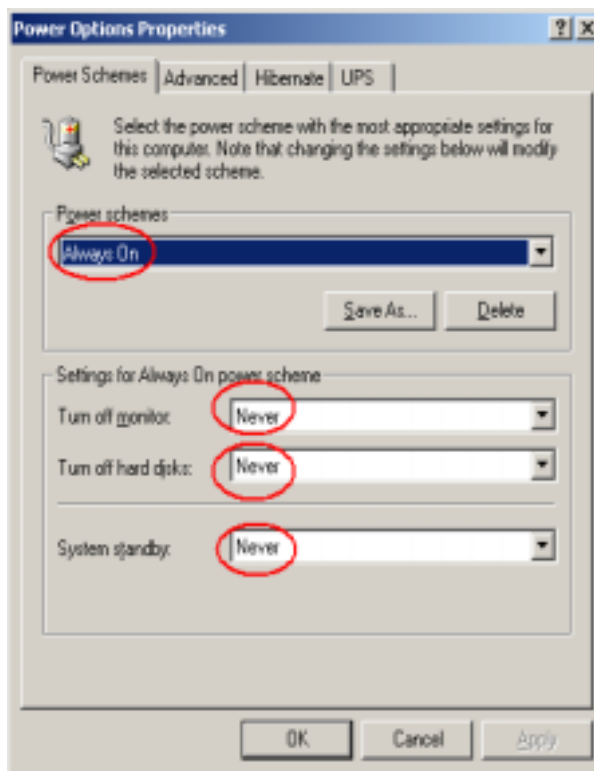
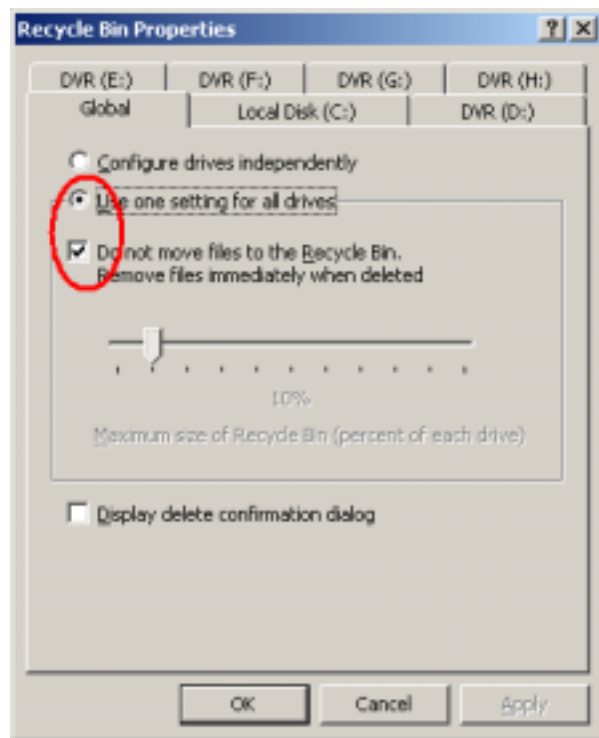
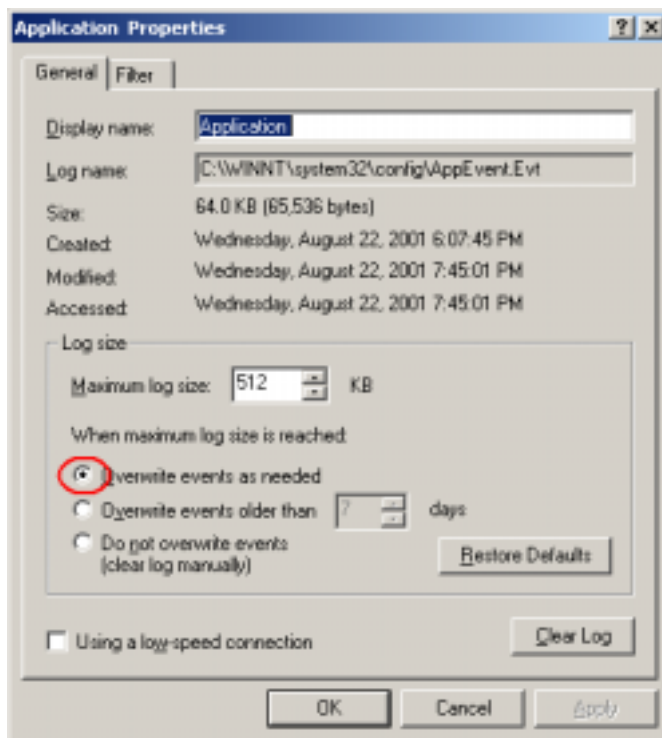
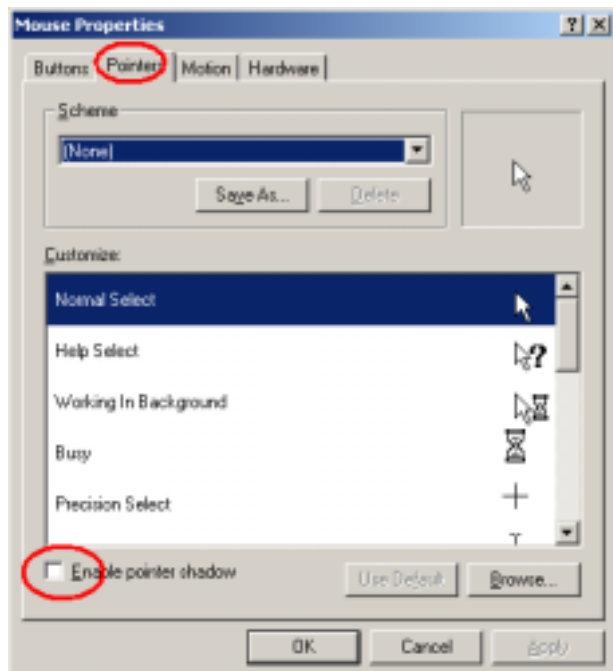


Figure 2-13 Power Options Properties

- c. Recycle Bin setting -> properties -> check 'Do not move files to the Recycle Bin' & 'Remove files immediately when deleted'.
- d. Event log setting : administrator tool -> event viewer -> check 'Overwrite events as needed'.


Figure 2-3-3

Figure 2-3-4

e. control panel -> Don't check 'Enable pointer shadow' option.


Figure 2-3-5

f. control panel -> users & passwords setting .

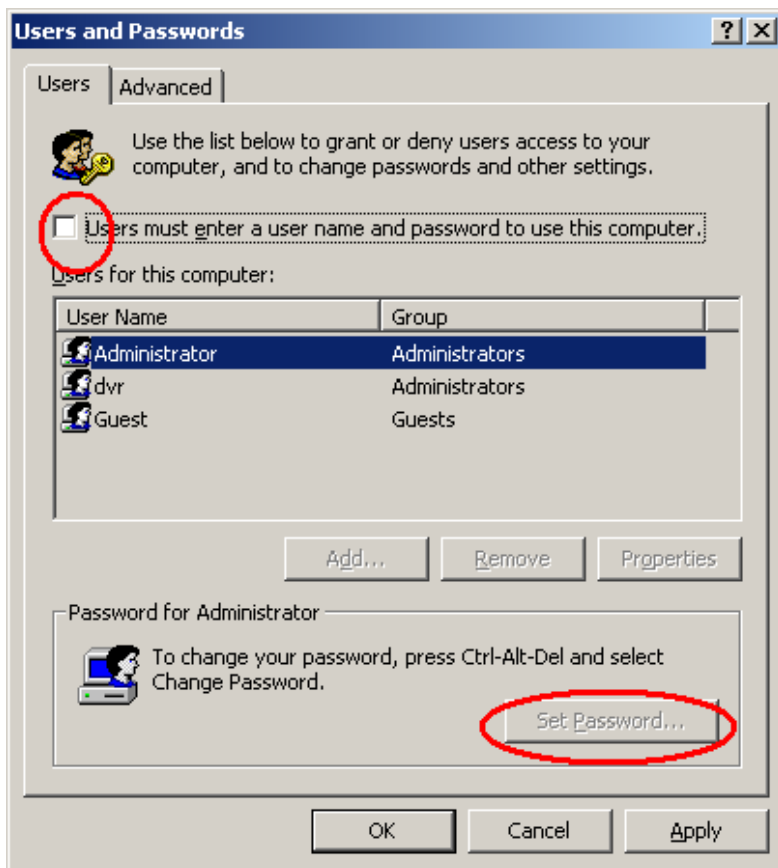


Figure 2-3-6

5. directX8.0 install (saved at c:\Backup directory)

- Download Windows 2000 drivers from www.microsoft.com and then install it.

6. Install Windows2000 Service pack 2. (saved at c:\Backup directory)

- Download it from www.microsoft.com and then install it.

7. Install Language pack (Option)

- After installing language pack, select desired language and set it as default language at **control panel -> global setting** and then restart system.

8. NetSafe-DVR installation (saved at c:\Backup directory)

- Install program with using installation CD.
- Choose correctly channel(16ch or 8ch) -> cpu type(P-III or P-IV) -> video type(NTSC or PAL) -> DVR board(TW99 or TW98) according to your system.

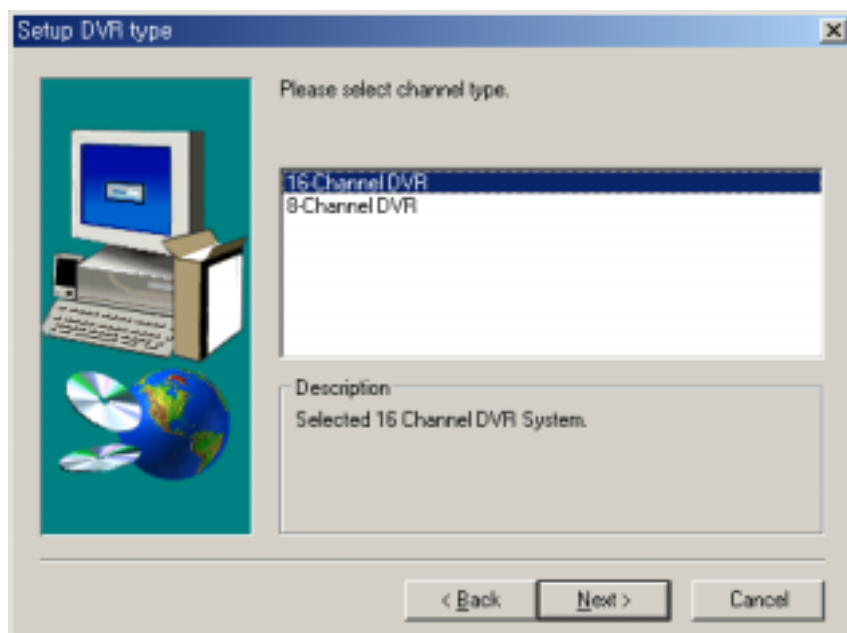


Figure 2-3-7

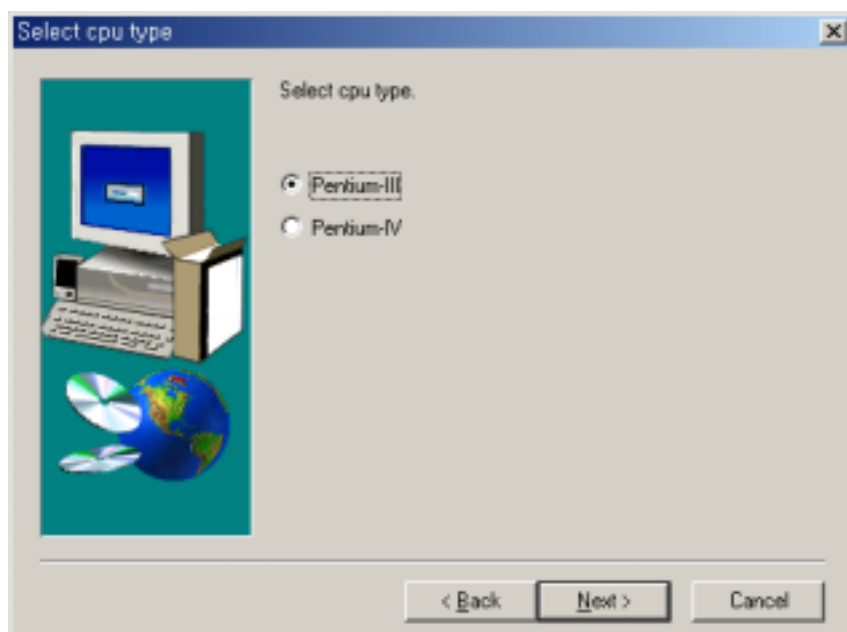


Figure 2-3-8

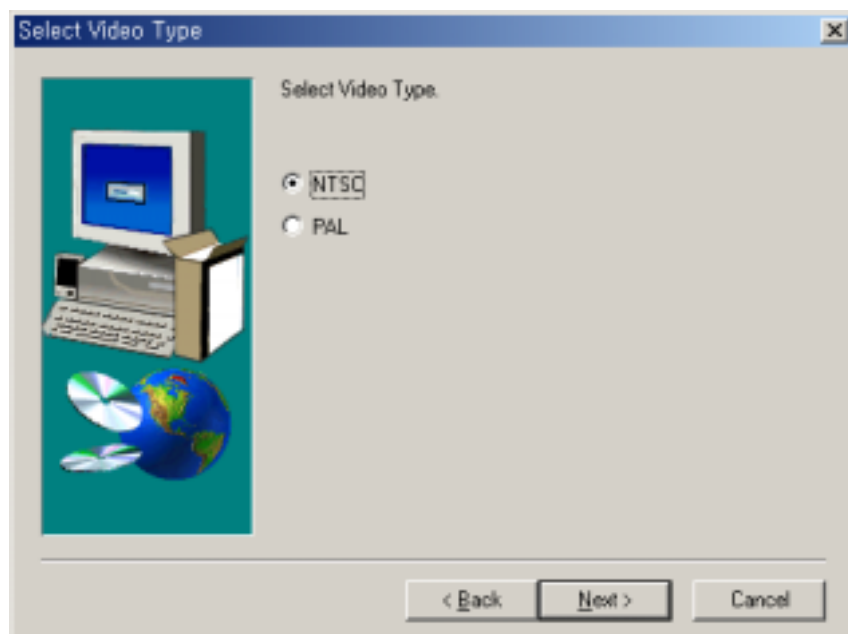


Figure 2-3-9

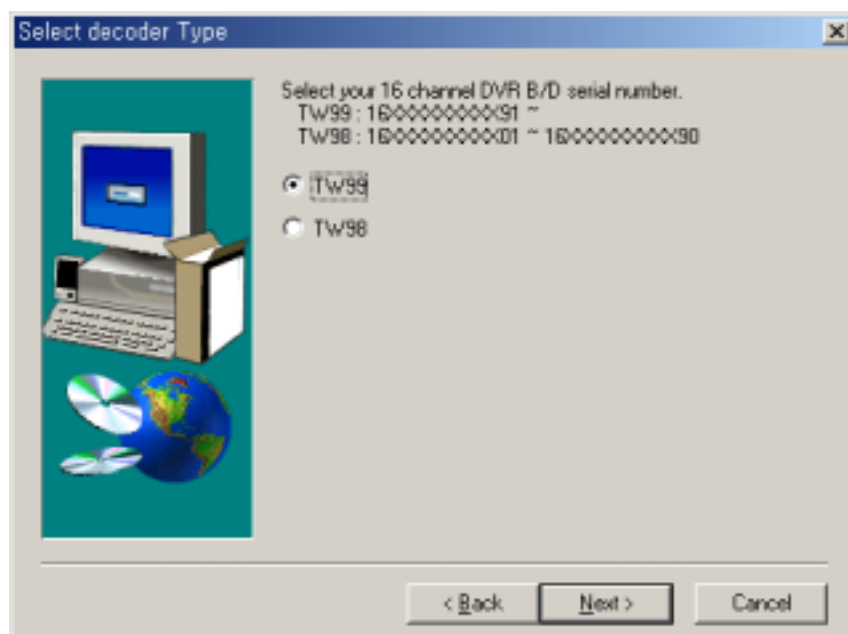


Figure 2-3-10

9. The End NetSafe-DVR Series Setting. Thank you.

2.4. NetSafe-DVR Partition Setting

1. Start -> settings -> Control panel -> administrator tools -> computer management

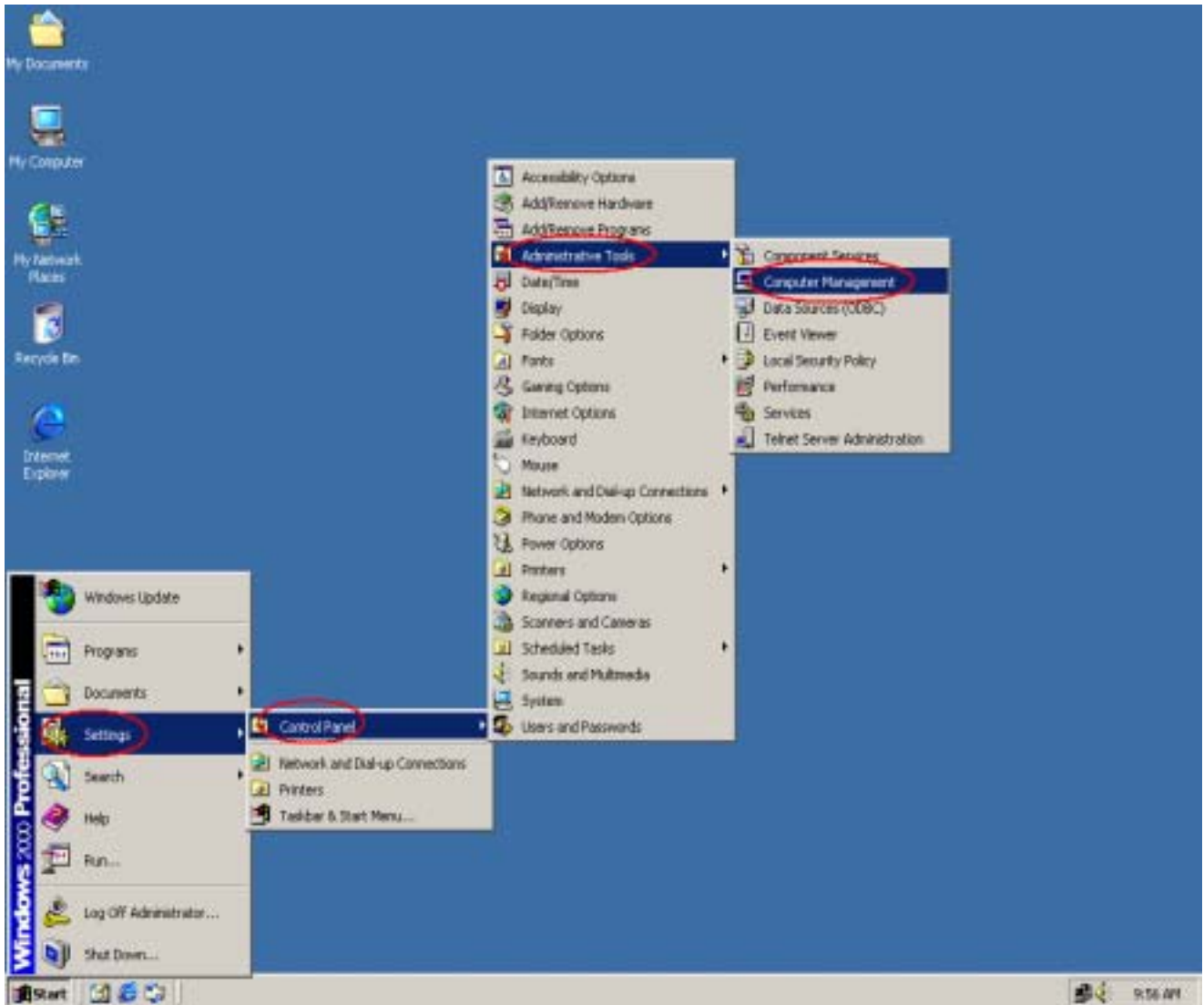


Figure 2-4-1

2. Storage -> disk management

2.1. Click right mouse button at “unallocated partition” -> create partition

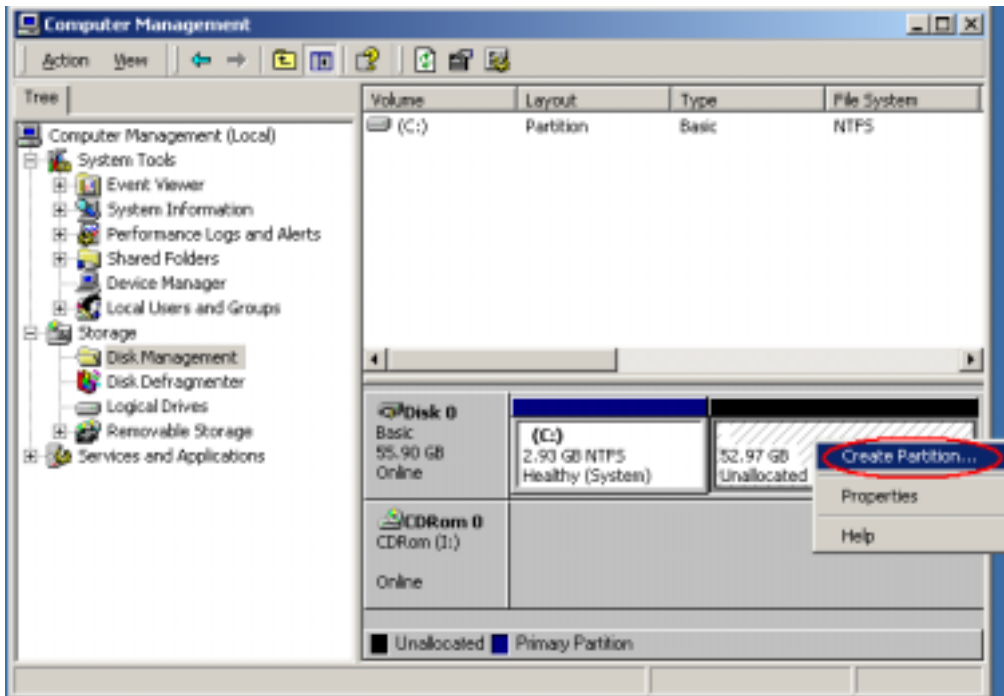


Figure 2-4-2

2.2. Click Next -> select the “Extended partition” type -> Next

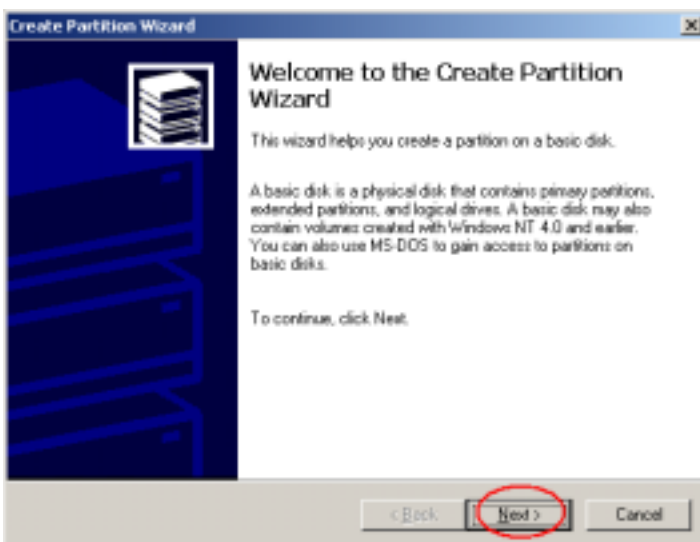


Figure 2-4-3

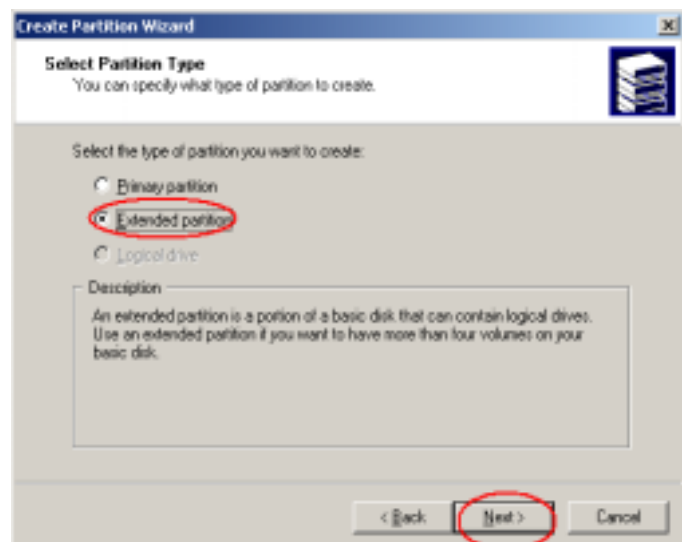


Figure 2-4-4

2.4. Now, your partition is "Free Space". -> mouse right button click -> create logical drive.

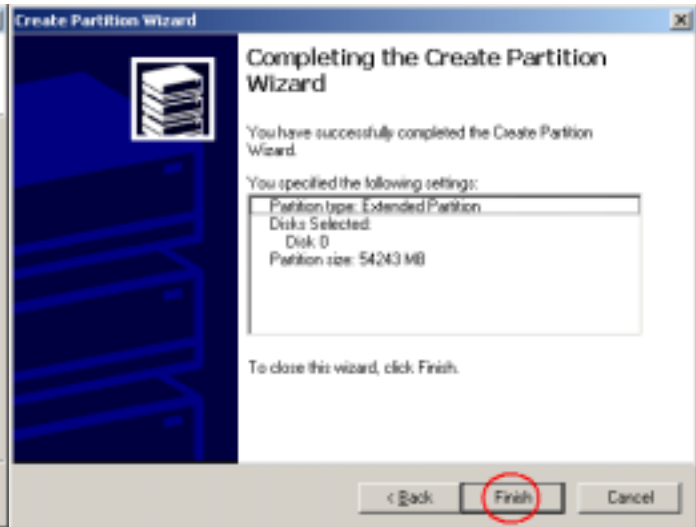


Figure 2-4-6

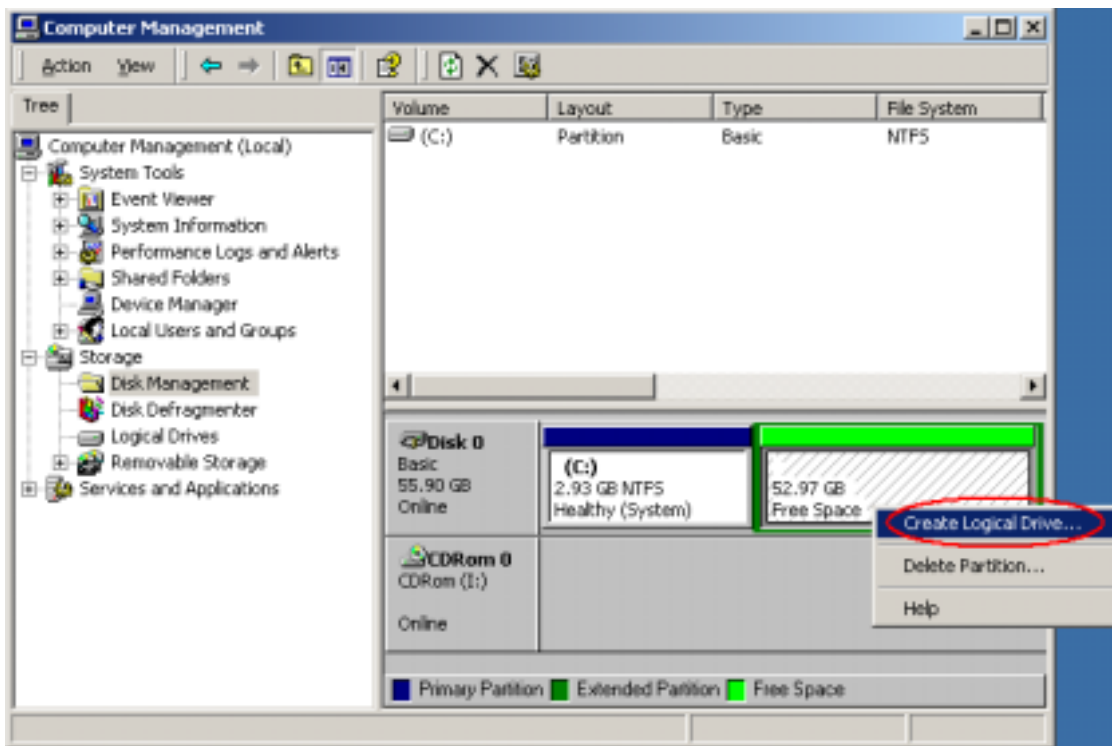


Figure 2-4-7

2.5. Now, your partition is “Free Space”. -> Click right mouse button -> create logical drive.



Figure 2-4-8

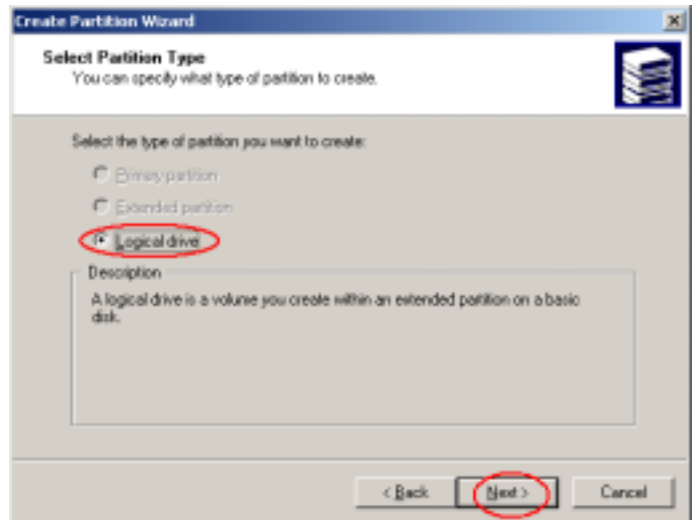


Figure 2-4-9

2.6. Choose a logical partition size. -> Assign drive letter and path.

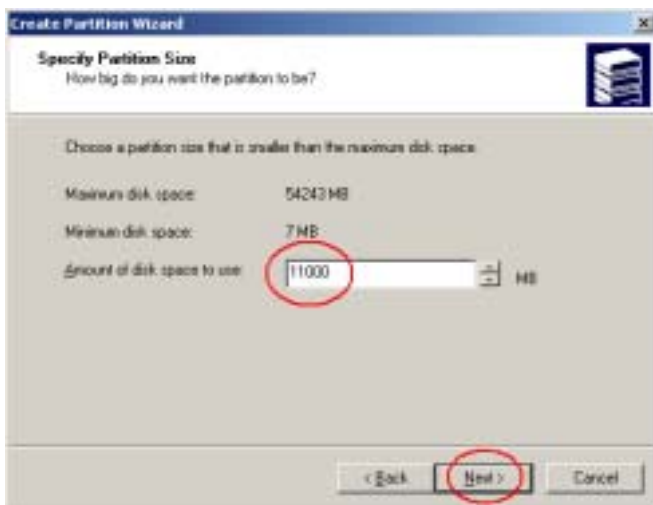


Figure 2-4-10

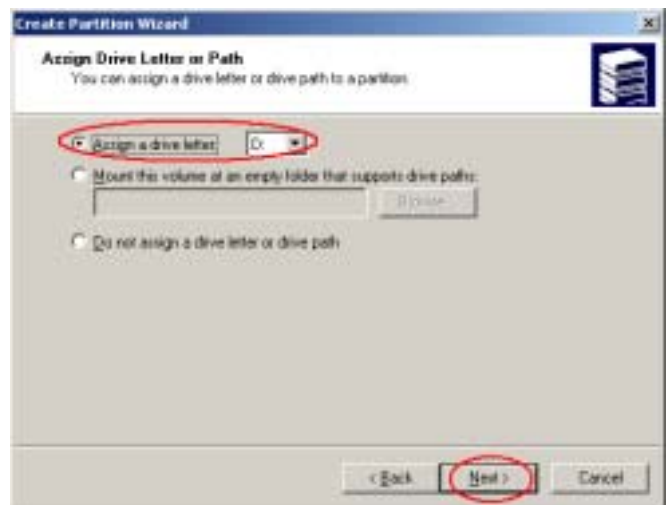


Figure 2-4-11

2.7. format the partition : select “quick format”, “FAT32” -> finish

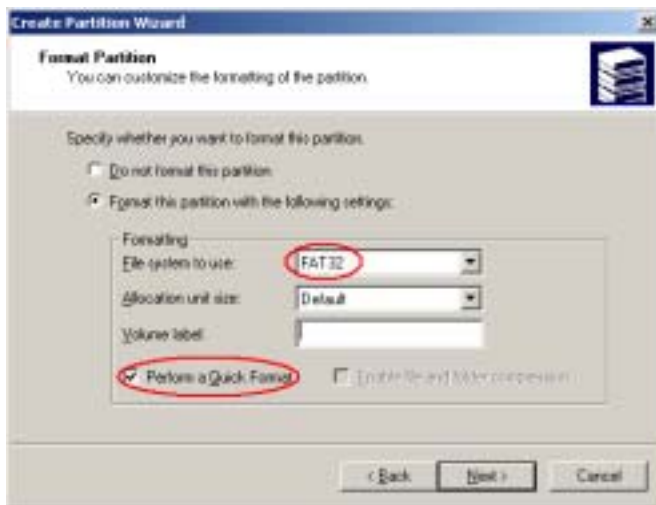


Figure 2-4-12

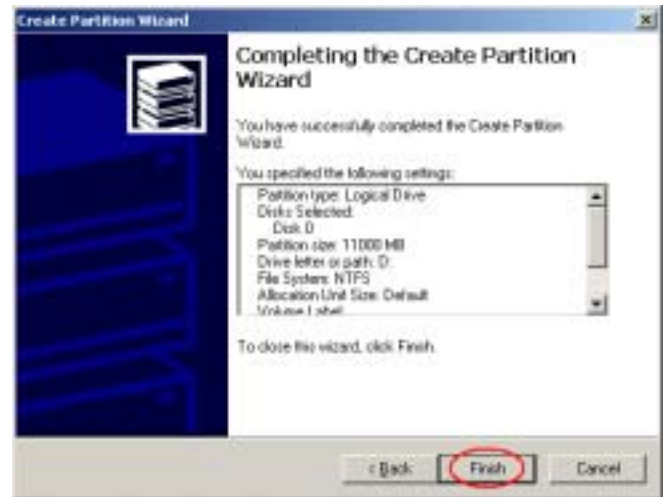


Figure 2-4-13

2.8. You can see that one logical partition created.

-> You must Repeat **Figure 2.4.7** ~ **Figure 2.4.13** progress. -> Confirm the “Logical Drive”.

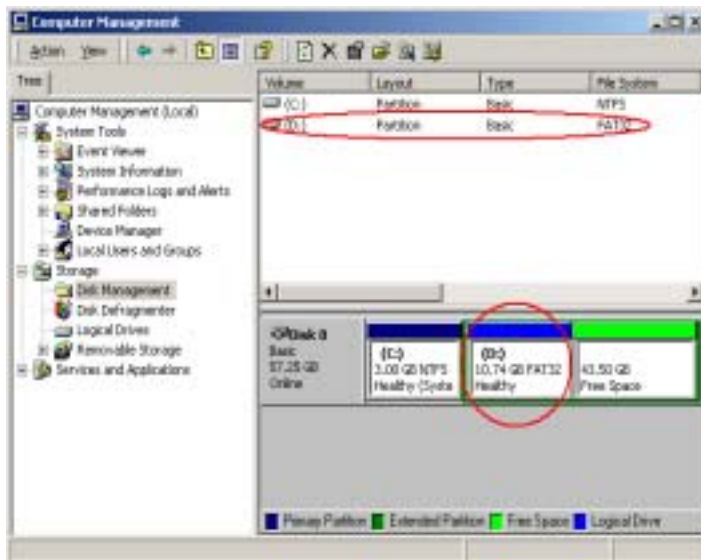


Figure 2-4-14

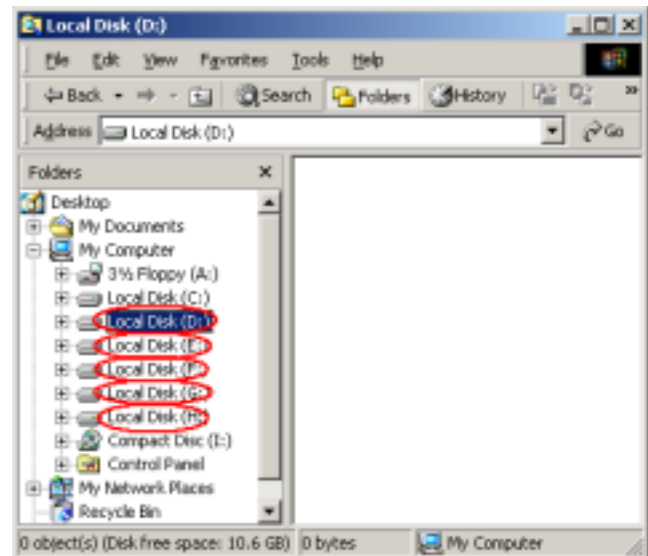


Figure 2-4-15

* If logical drive is not formatted, you should format it.

3. HDD Extension

When factory release NetSafe-DVR, 60GB HDD is installed in NetSafe-DVR. Up to 4 HDDs can be added in the rack like the picture below.

3.1. Mount HDD in rack.

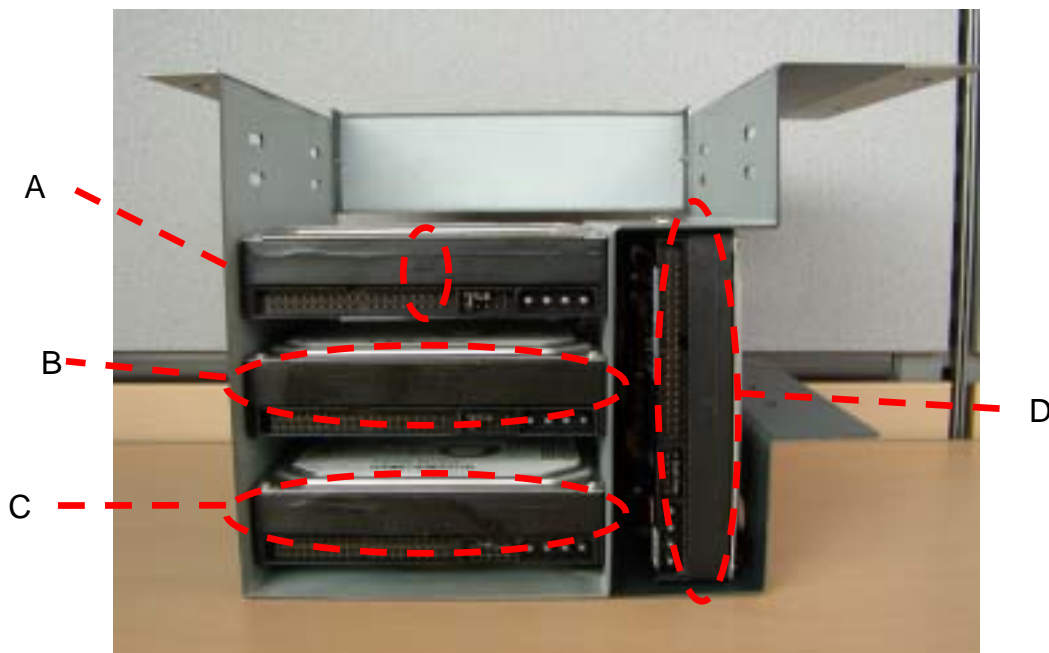


Figure 2-4-16 HDD Rack

- A : Primary Master
- B : Secondary Master
- C : Secondary Slave
- D : Primary Slave

Up to 4 HDDs are expandable.

- For expansion HDD, we recommend you to follow the orders like picture above. (order : A->B->C->D).
- Up to 3 HDDs expansion, follow our recommendation. (A:Primary Master, B:Primary Slave, C:Secondary Master)
- Up to 2 HDDs expansion, A:Primary Master, B:Primary Slave.

* HDD Jumper : Set Master/Slave mode. When user want to use more HDD, refer to the manual of a current using HDD.

Following steps are about Segate HDD jumper setting.

<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Master or single drive
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Drive is slave
<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Master with non ATA compatible slave
<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Cable select
<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Limit drive capacity

e.g) Seagate HDD Options jumper block

3.2. Computer Management -> Storage -> disk management

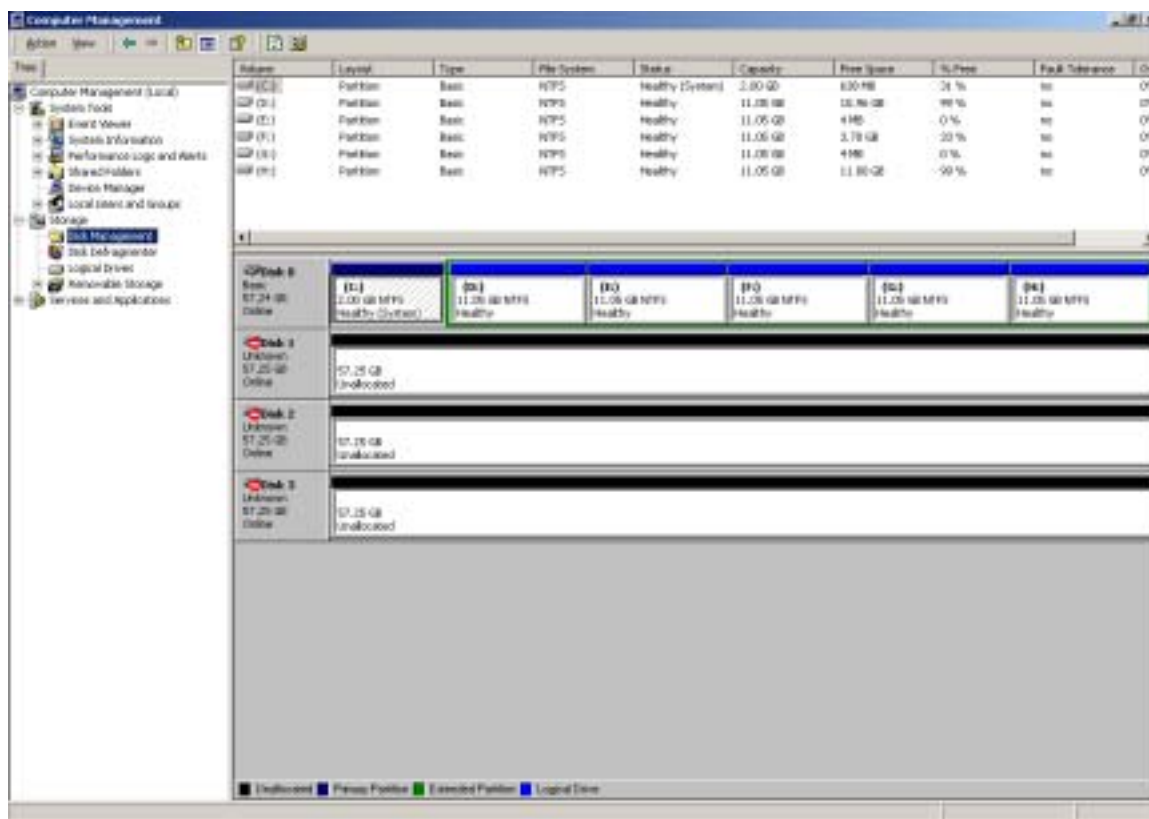
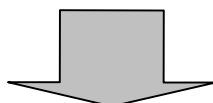
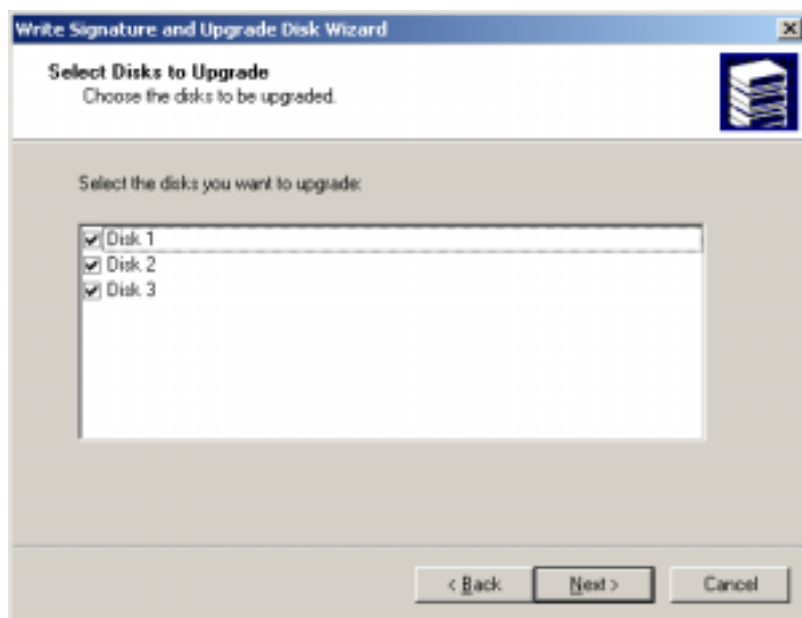
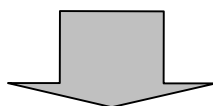
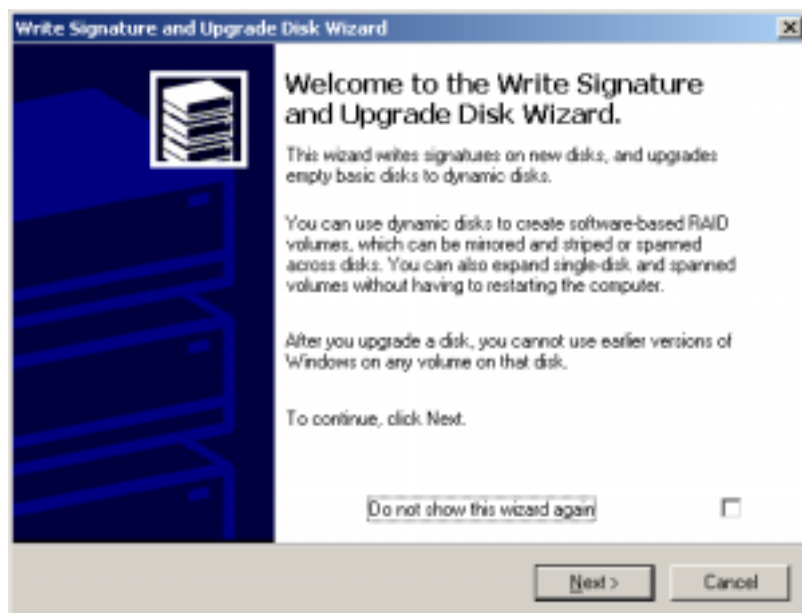
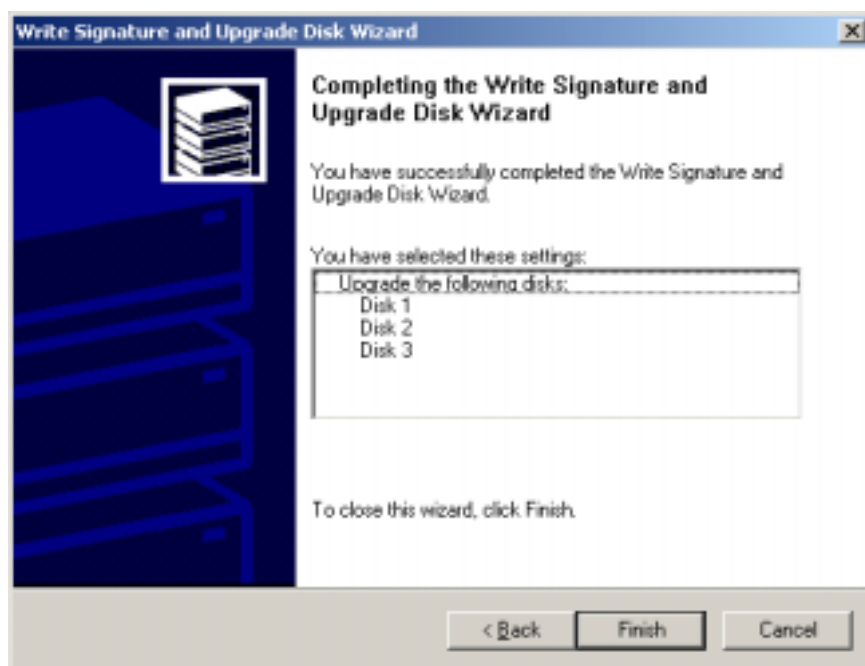


Figure 2-4-17 Disk Management window after installing 4HDDs

3.3. HDD recognition.





3.4. Choose 'Create Volume' with clicking right mouse button.

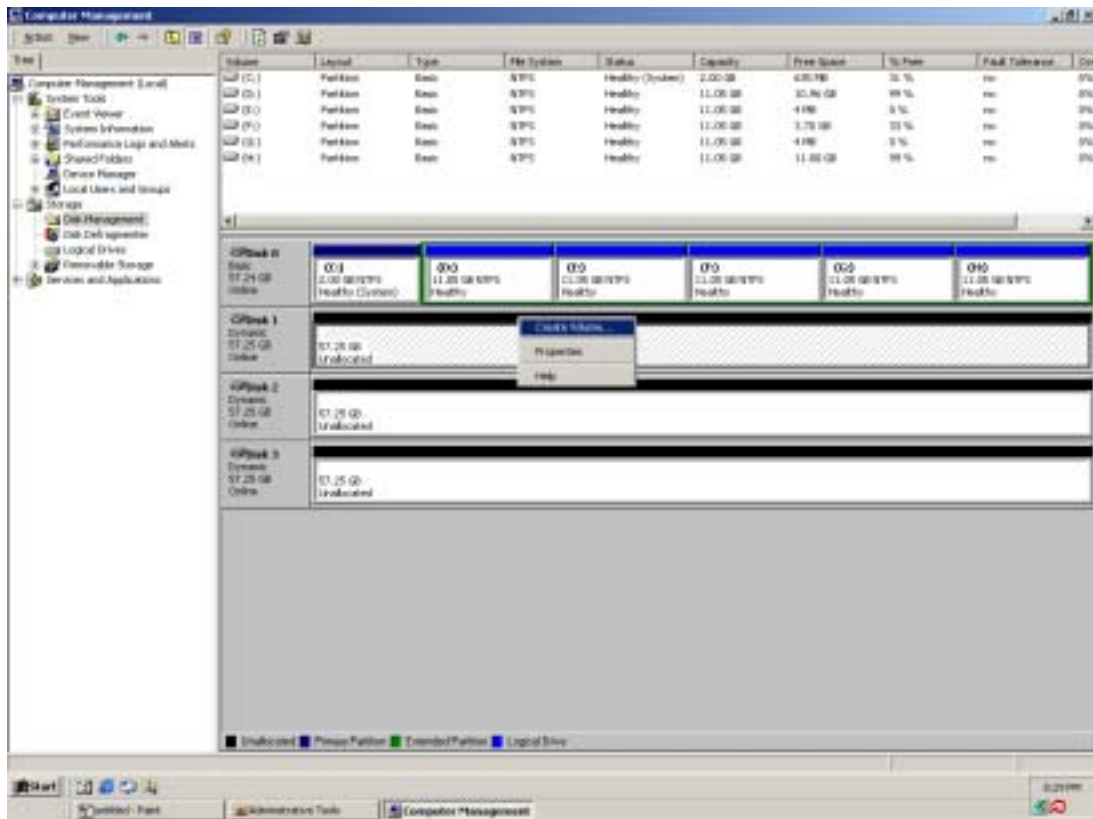
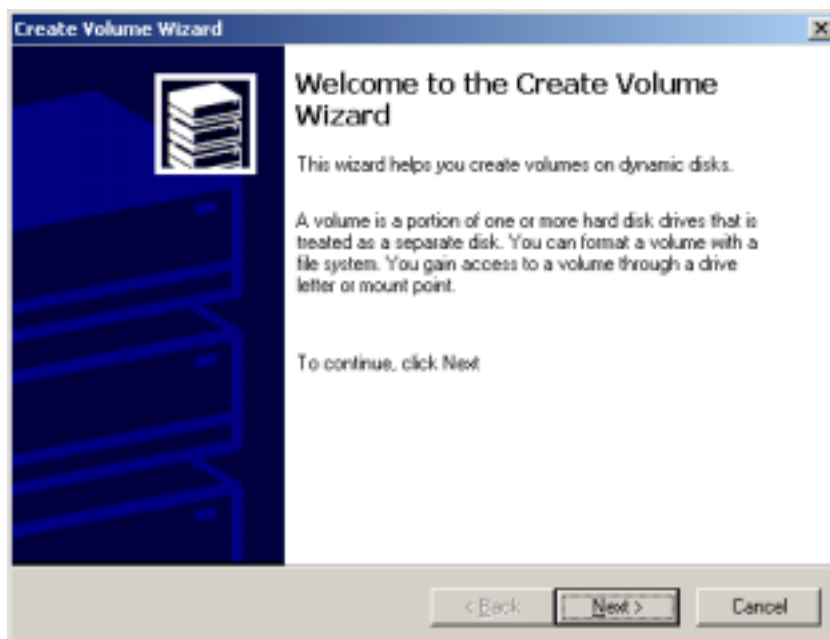
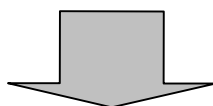
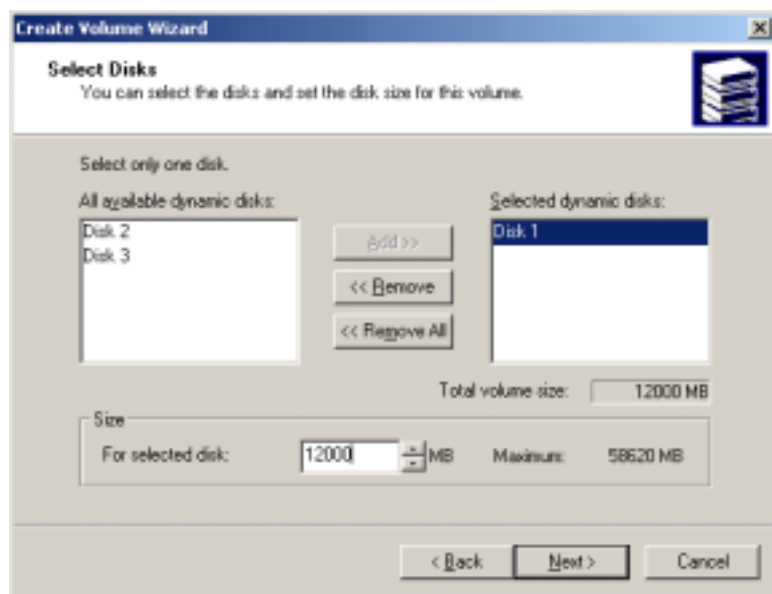
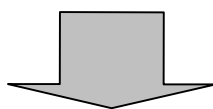
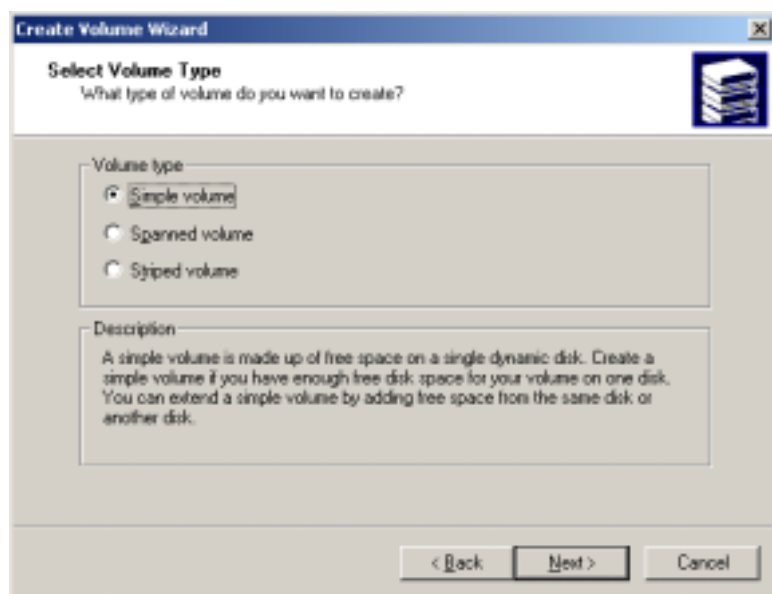
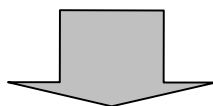
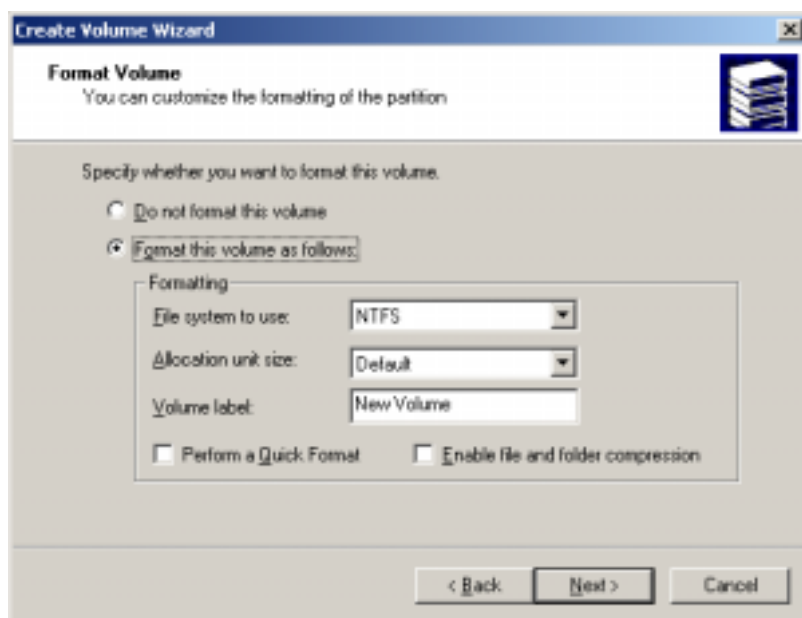
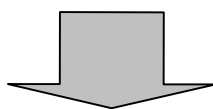
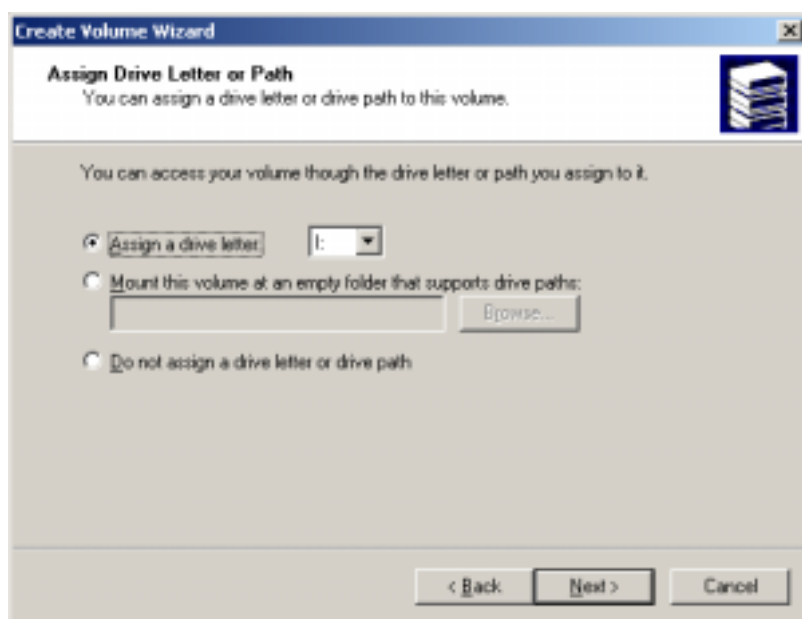
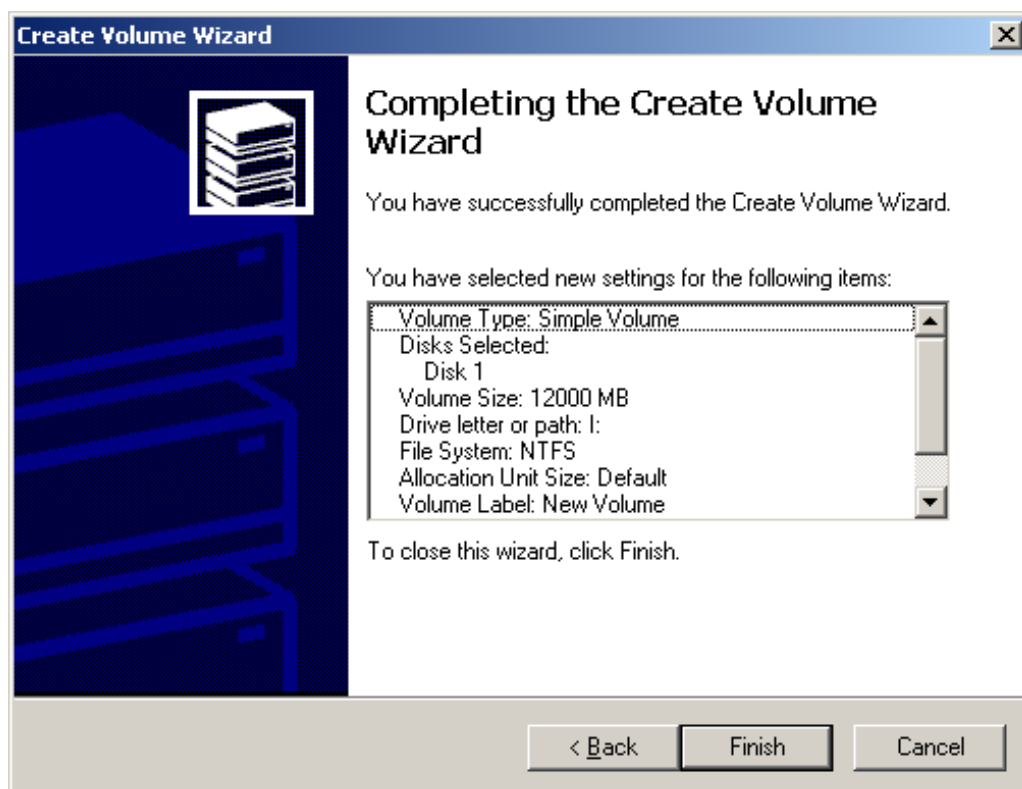


Figure 2-4-18 Create Volume









<NOTE for HDD partition >

In case of that additional backup media is installed in NetSafe-DVR, Windows2000 would recognize your backup media as an ordinary data recording HDD. Not like Windows'98, part of backup media(IEEE1394) can be recognized as fixed HDD in Windows2000, and this makes problem that system records data at backup media.

You cannot record data if a device(such as CD-RW) mixed with HDD.

To prevent this, rename the label of a device that you would use as backup media as 'backup', and use other name or leave it empty on each HDD partition.

2.5. Install & Reinstall NetSafe-DVR Program

Follow next steps when you upgrade Operating System or need new installation.

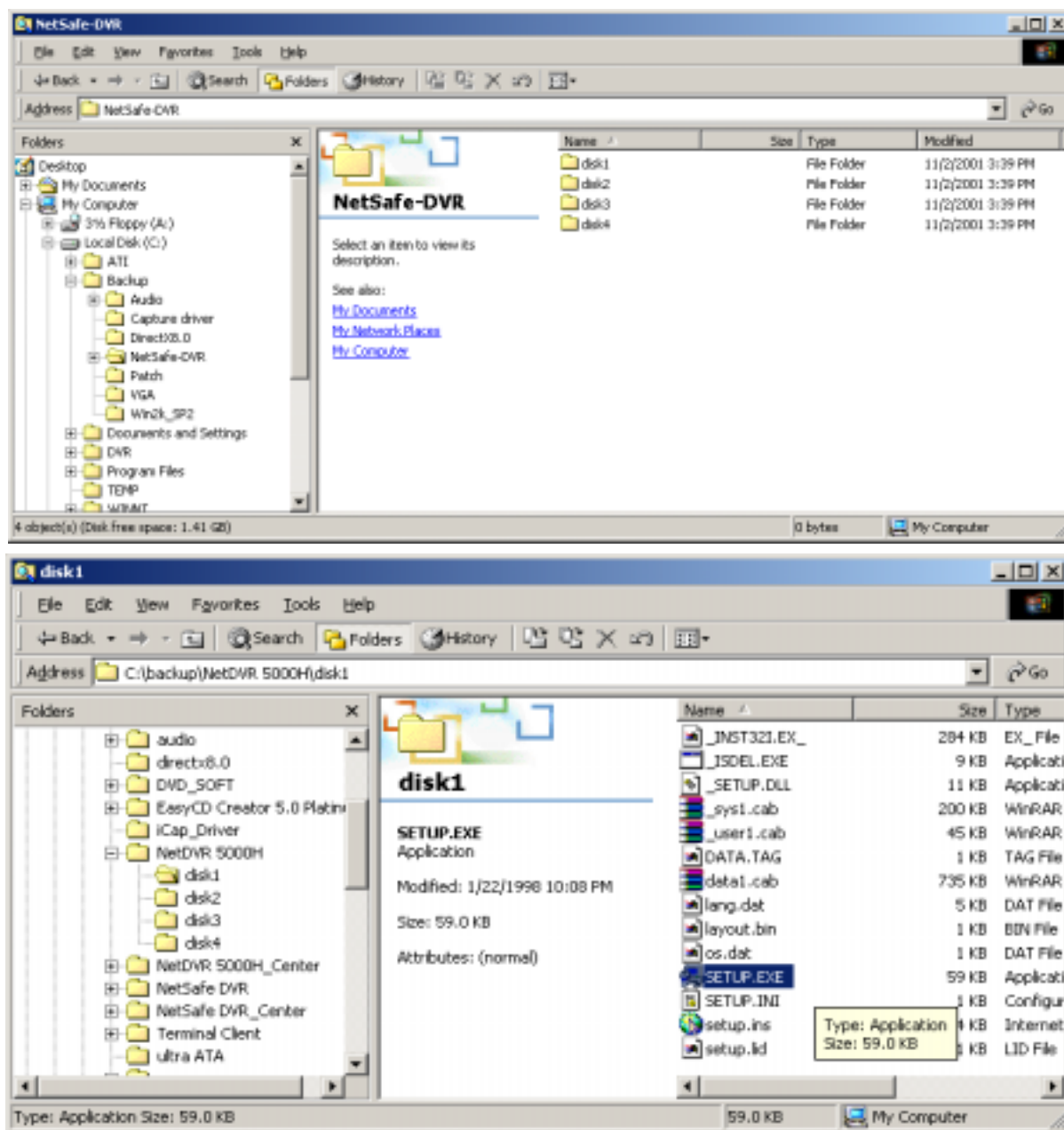
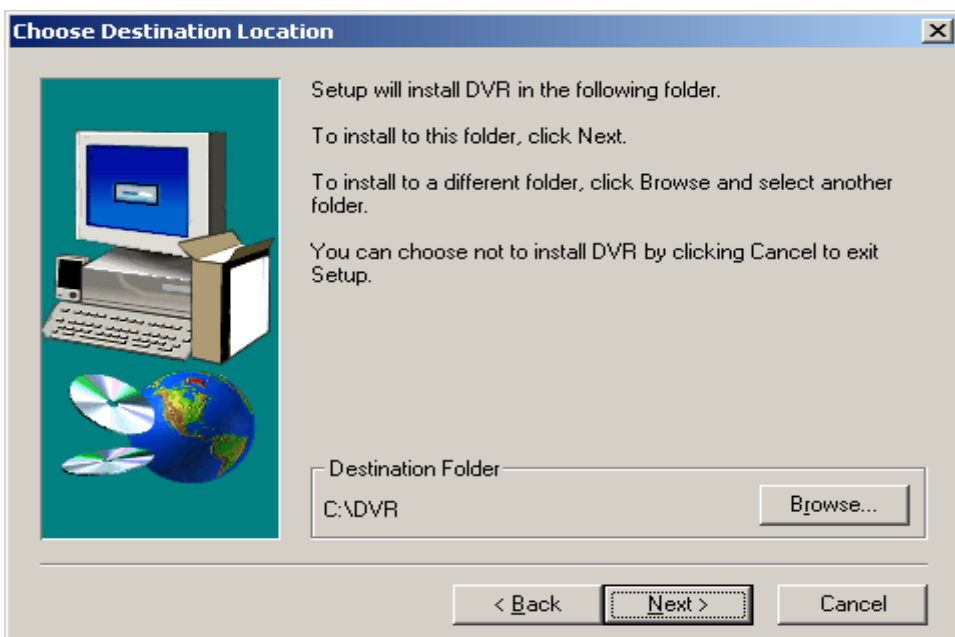
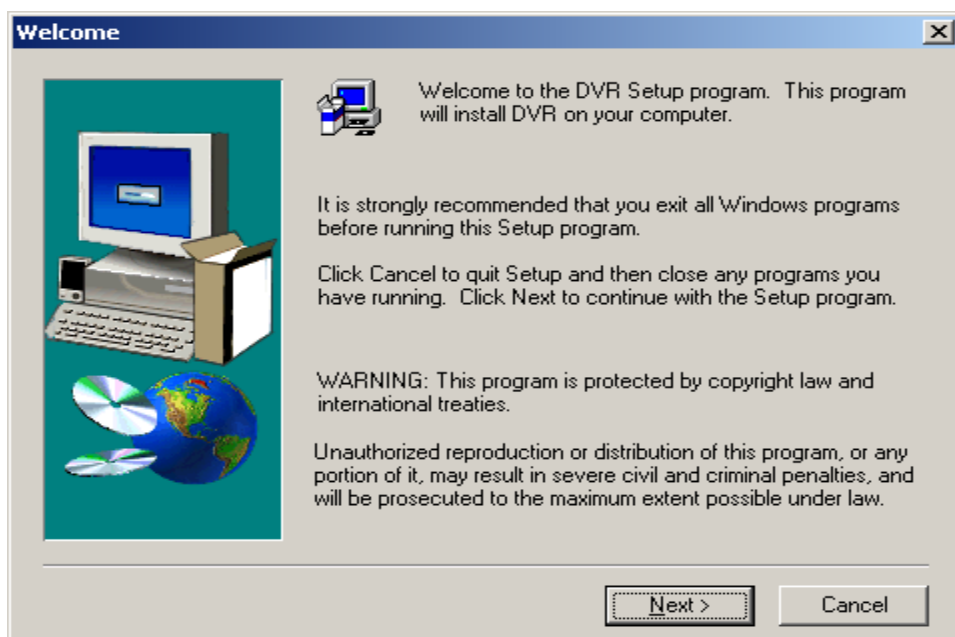
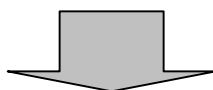
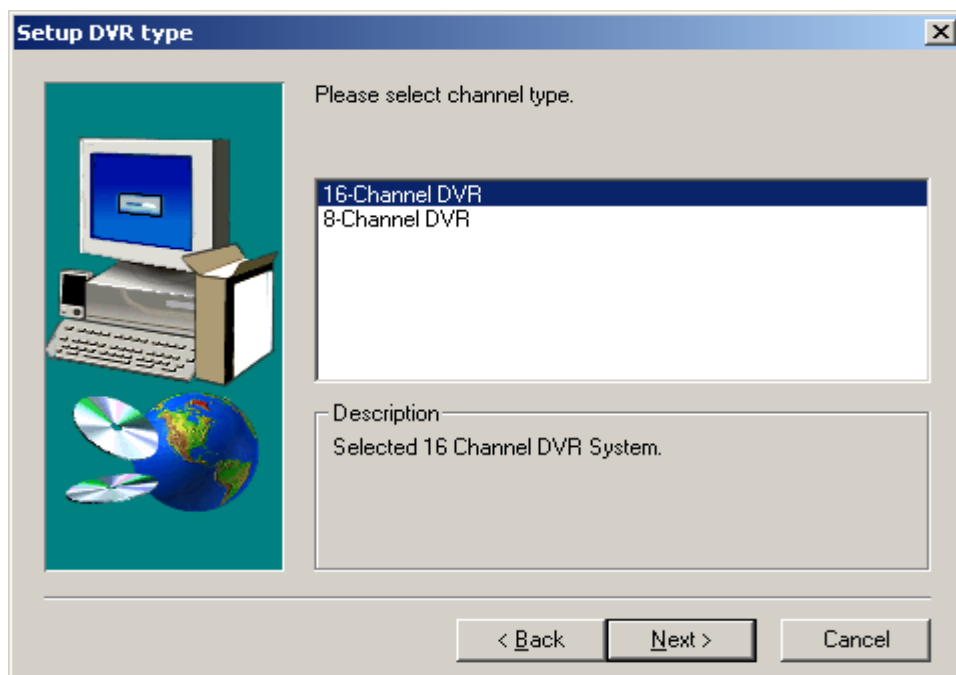
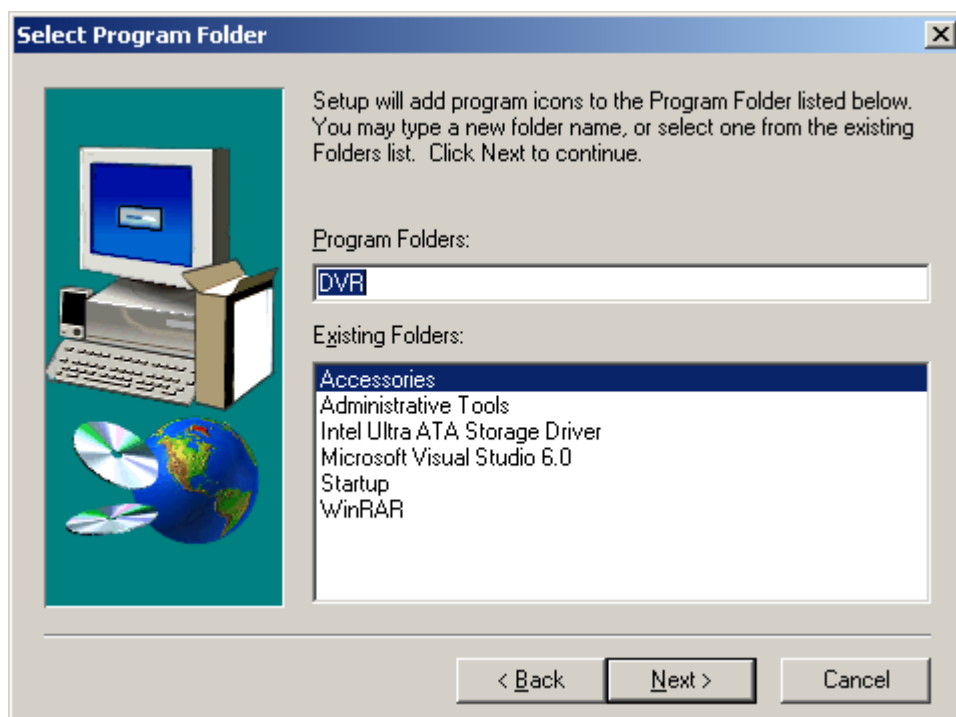
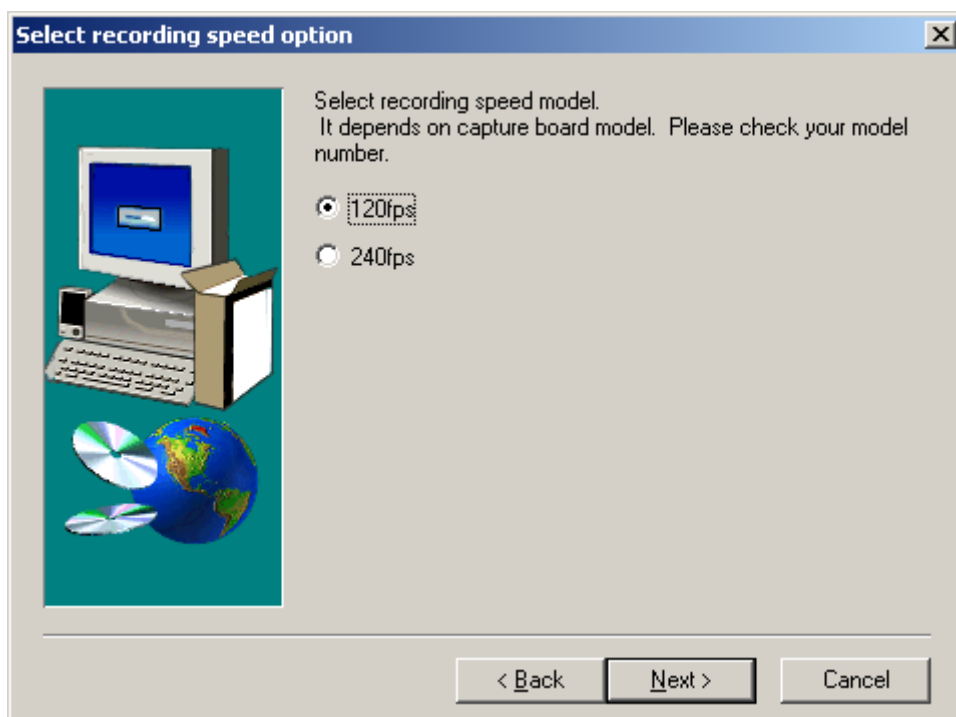
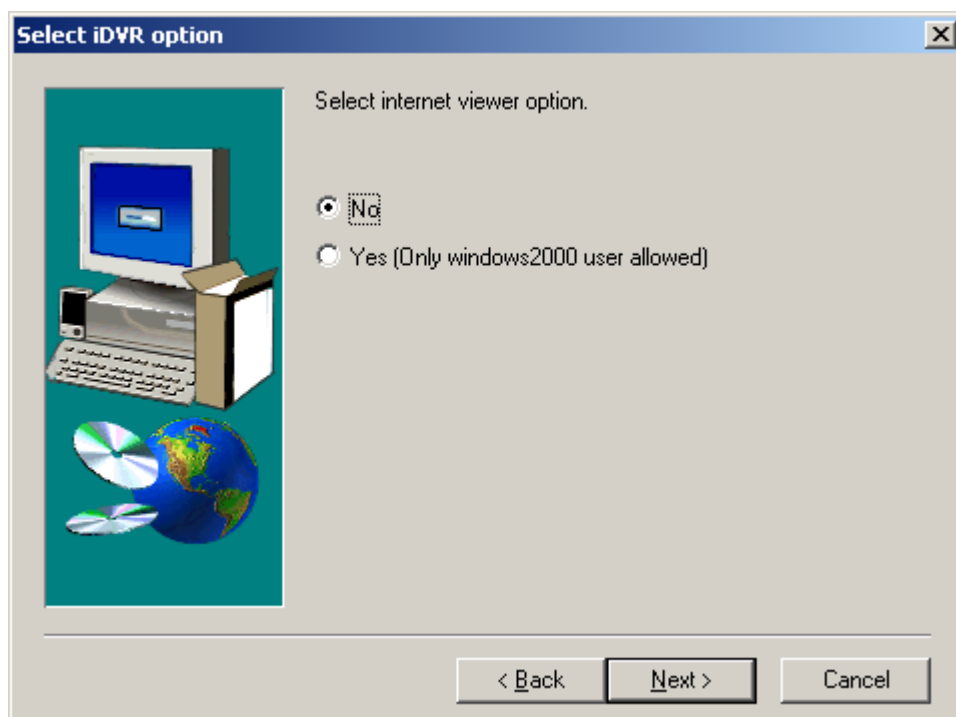


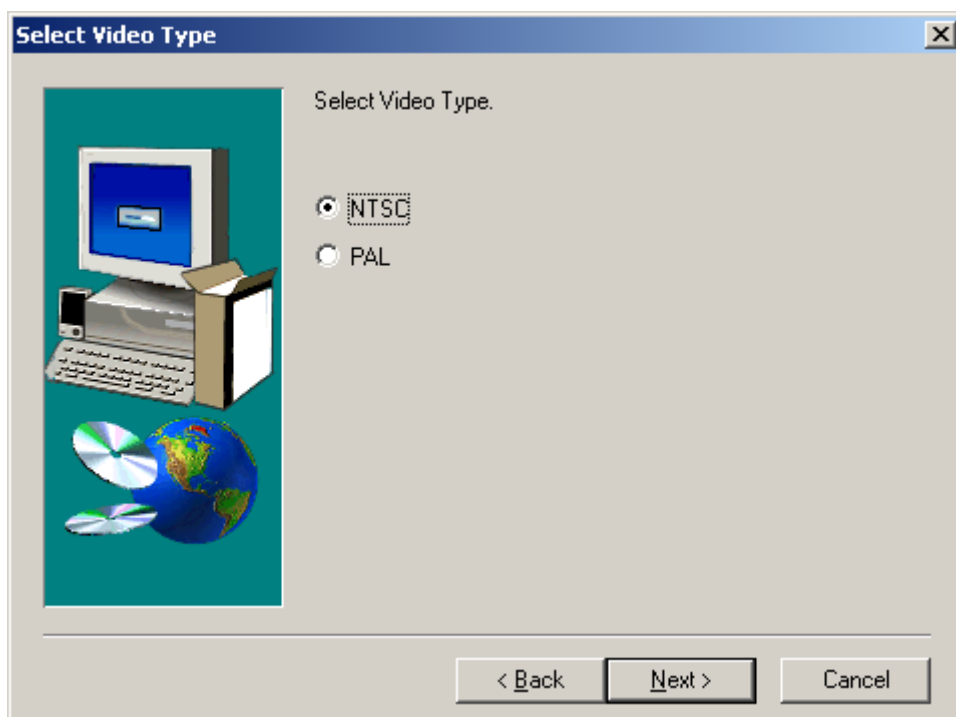
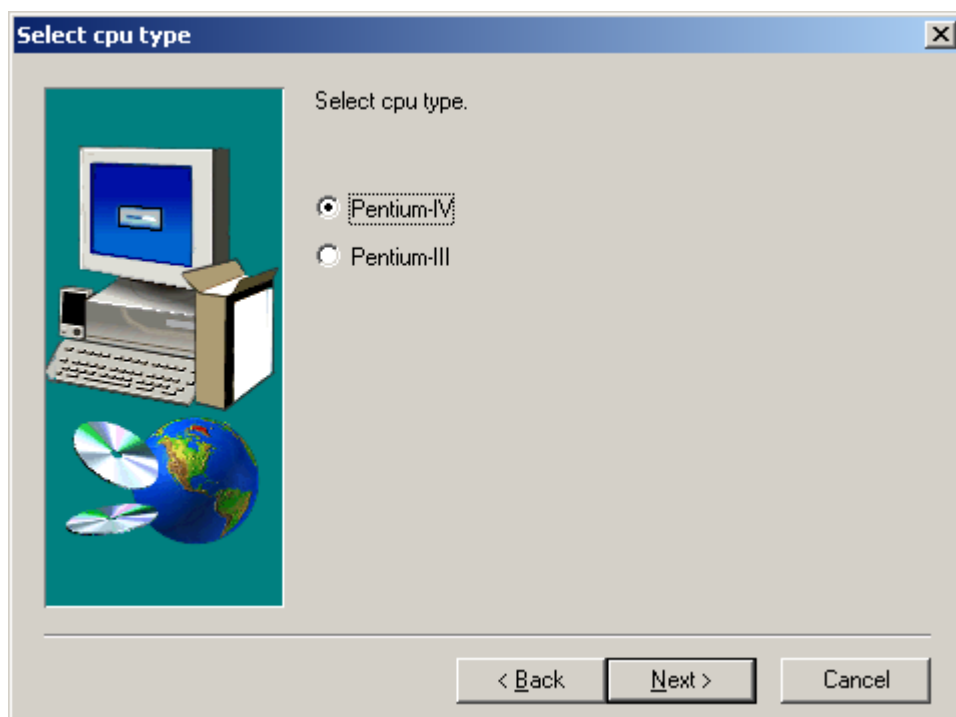
Figure 2-5-1 Install program folder

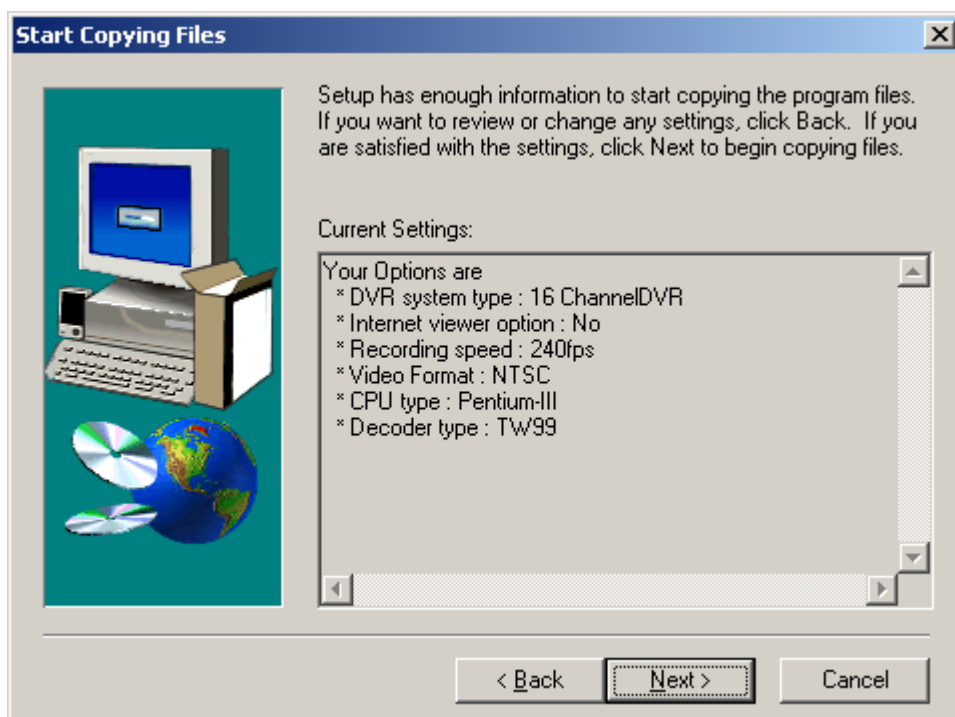
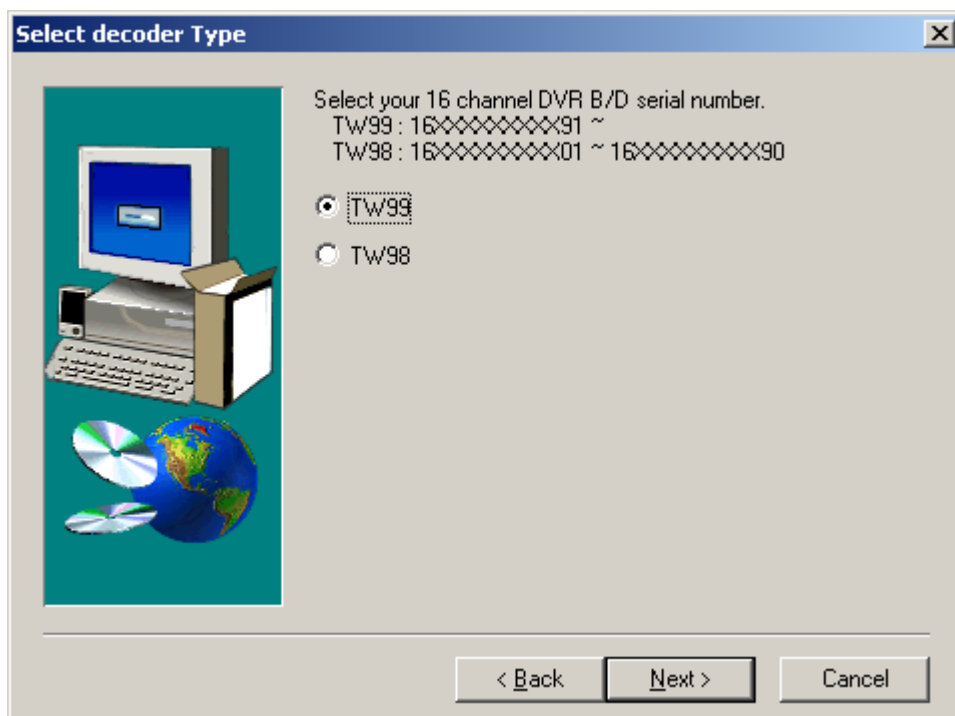
Finish NetSafe-DVR program by using Ctrl+Alt+Shift+F4 keys, and then double click Setup.exe like Figure[2-5-1].

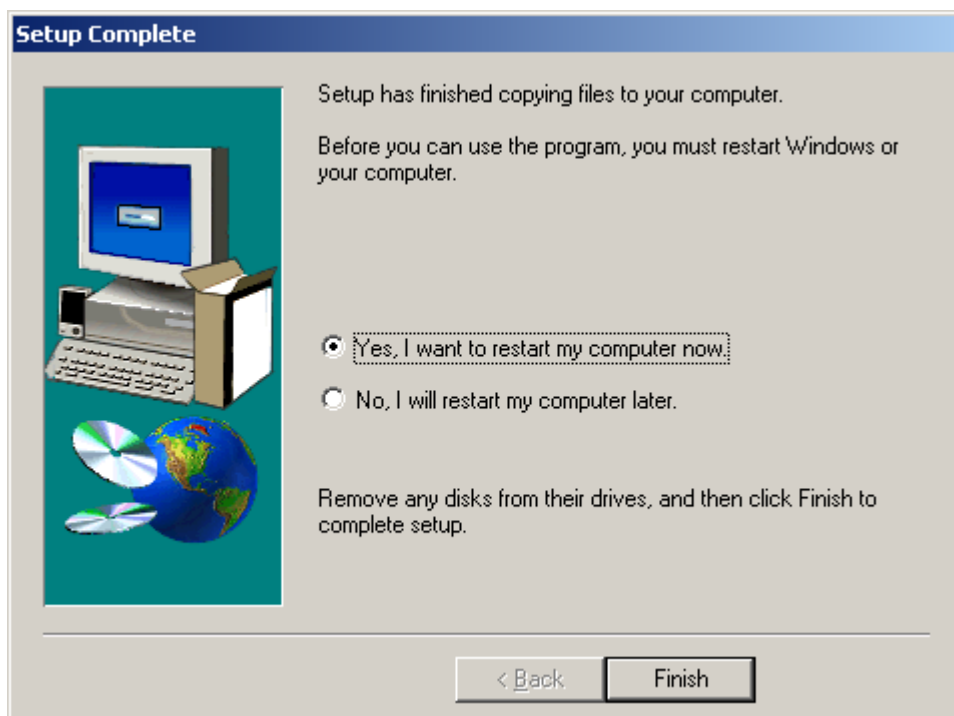












* You should restart NetSafe-DVR program after installing NetSafe-DVR program.

When you upgrade program, first you should delete installed program, and then install new program. Following steps are about how to delete installed program.

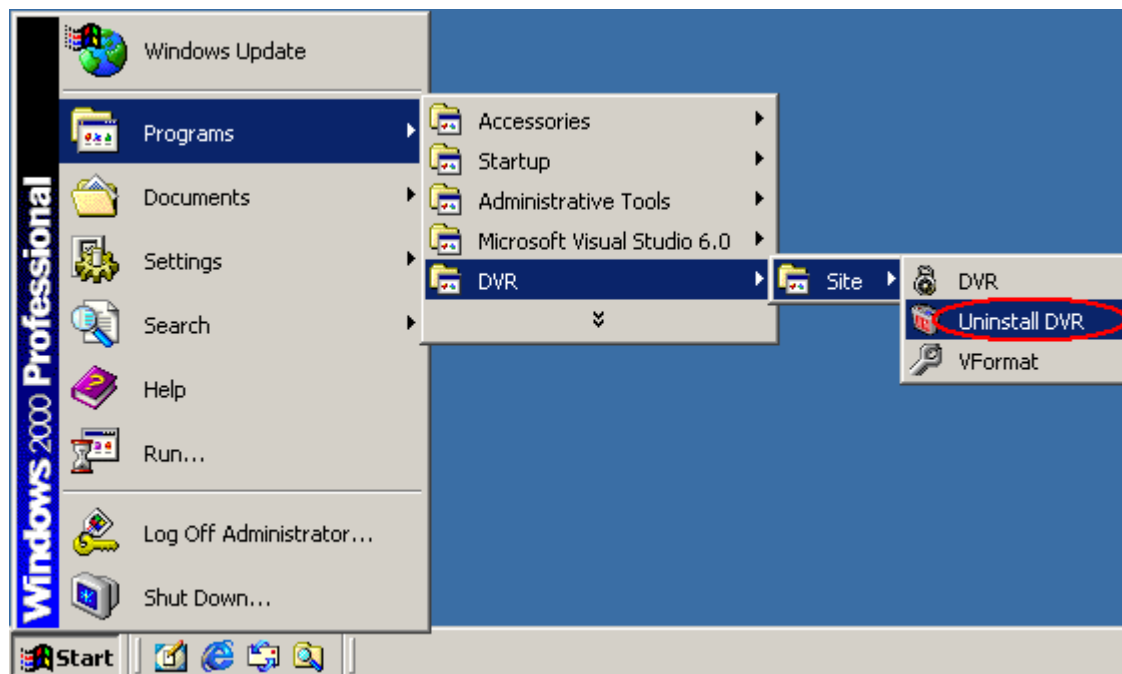
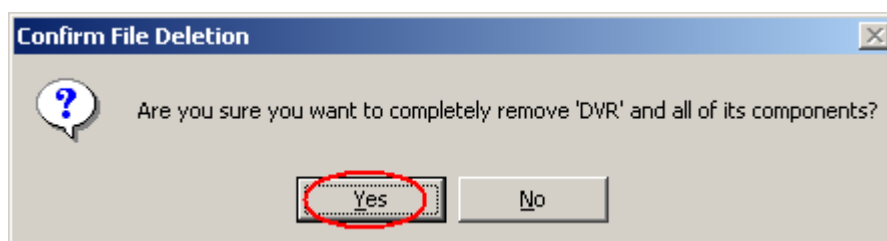
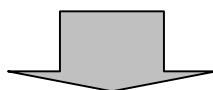
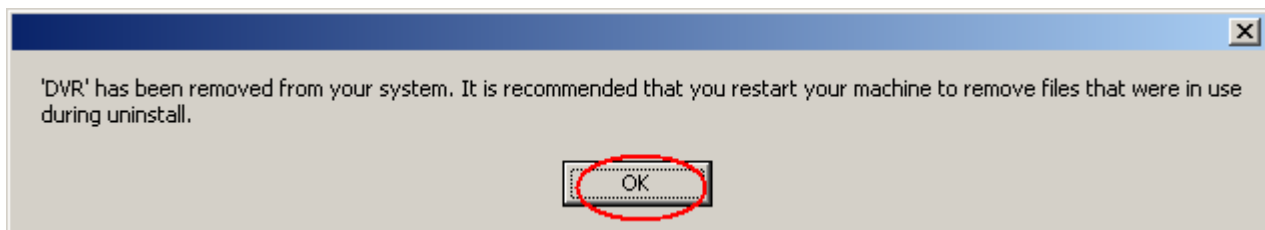
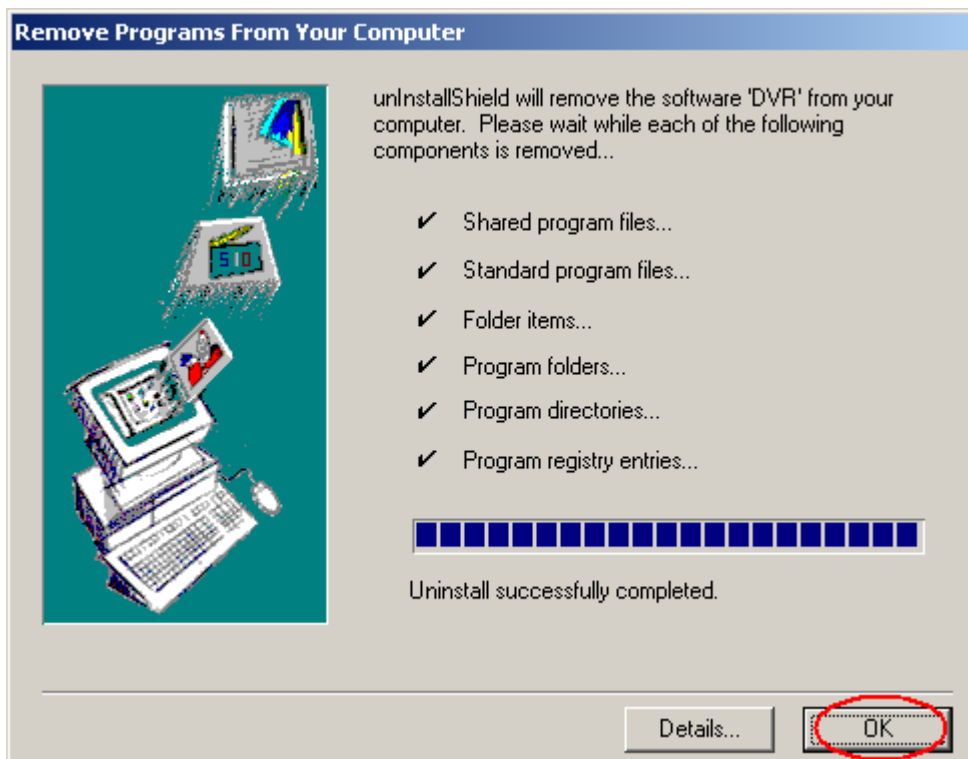


Figure 2-5-2 Uninstall Program







You should restart your system after uninstall.

When you try to upgrade your system without restarting, error message would be shown that you have to restart your system, the program would not be installed.

3. System Algorithm

For your better understanding overall system, this part explains overall NetSafe-DVR system, data flow, algorithm of H/W and S/W.

3.1. System Data Flow

This system converts analog signal of camera to digital data, and then records it into HDD by using MJPEG compression algorithm.

For playback stored data, first decompress stored data and then it is played by using VGA card.

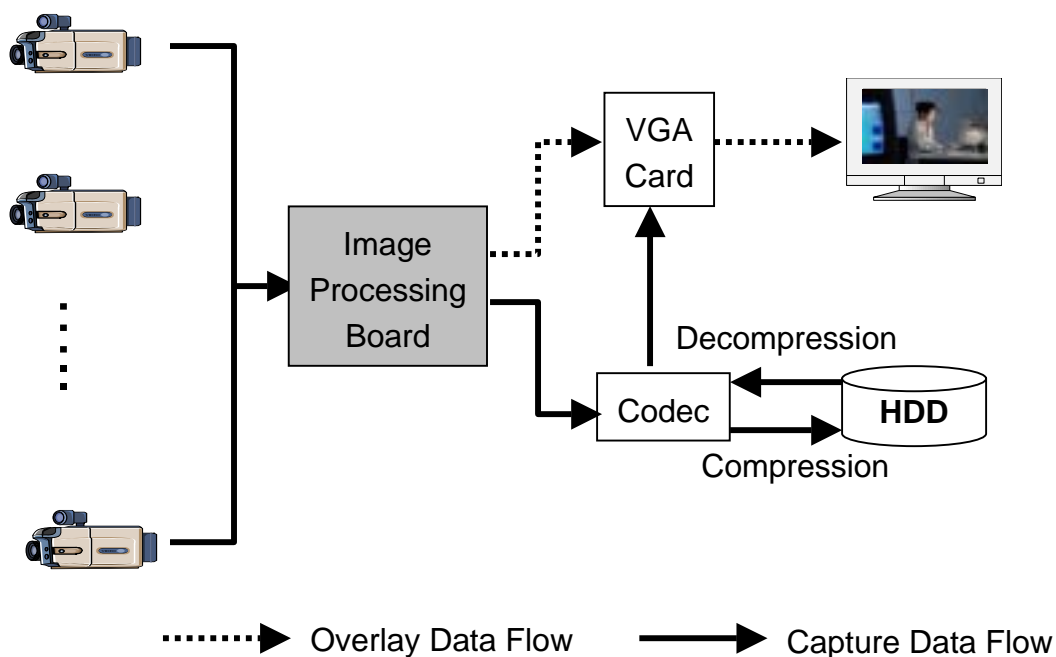
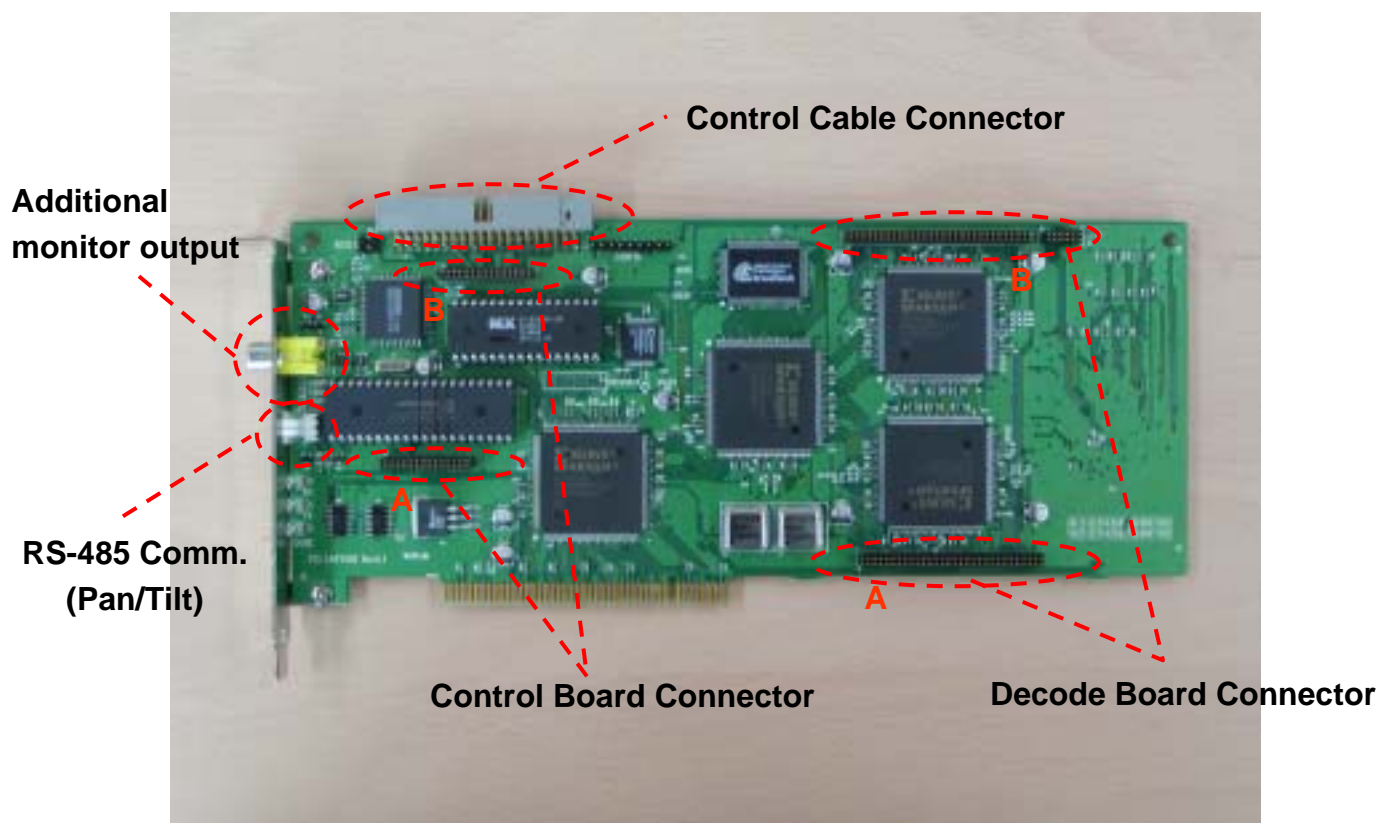


Figure 3-1 Data Flow

3.2. Image Processing Board

This board converts analog image data to digital data, and then send it to memory by system data bus, and recorded into HDD after CODEC calculated compressing process. Following are the functions of this board.

- * Image Overlay
- * Image Capture
- * Sensor & controller I/O
- * RS-485 communication(Pan/Tilt)
- * Watchdog
- * Additional monitor output.



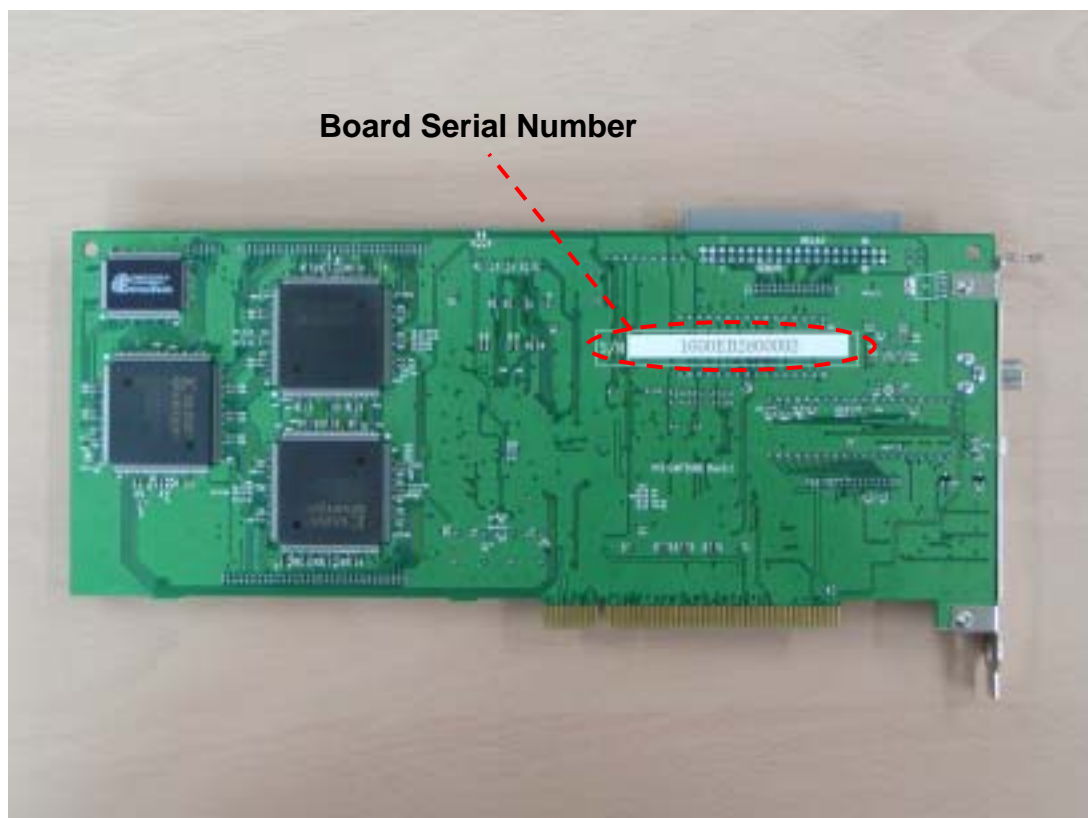


Figure 3-2 Image Processing Board (Main Board)

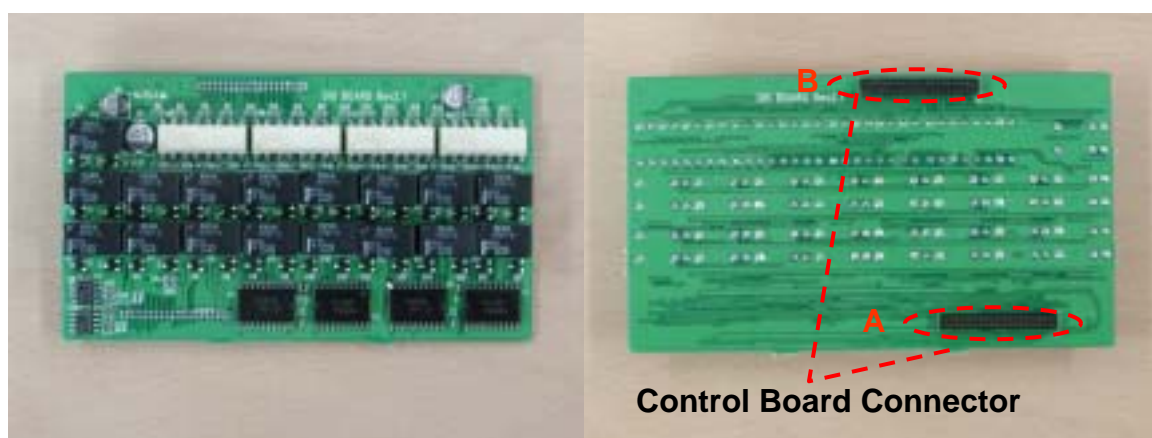


Figure 3-3 Control Board

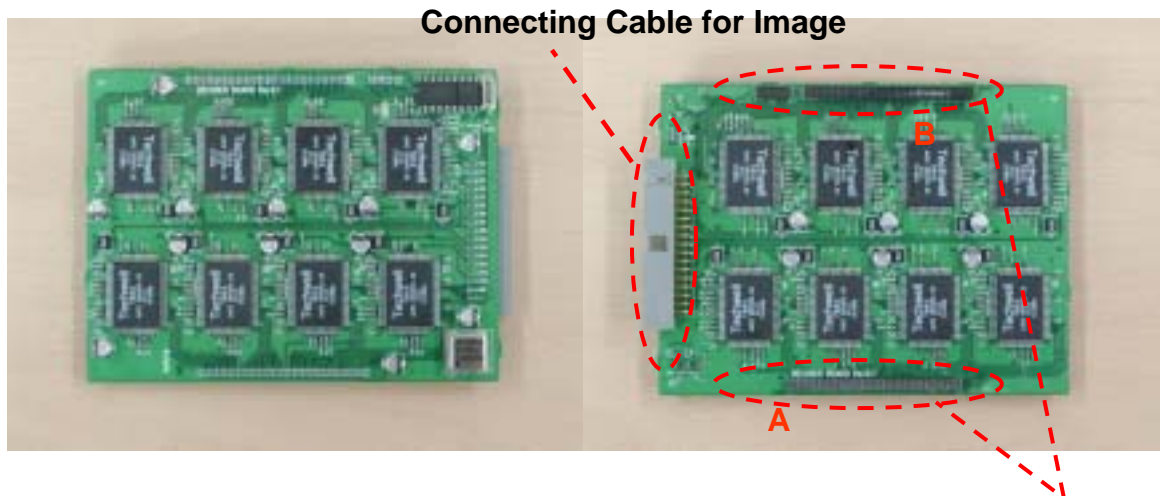


Figure 3-4 Decoder Board

**Connectors for
Decoding Board**

To assemble each three kind of boards as you see the pictures on this page, make sure each connector carefully and connect it.(A->A, B->B)

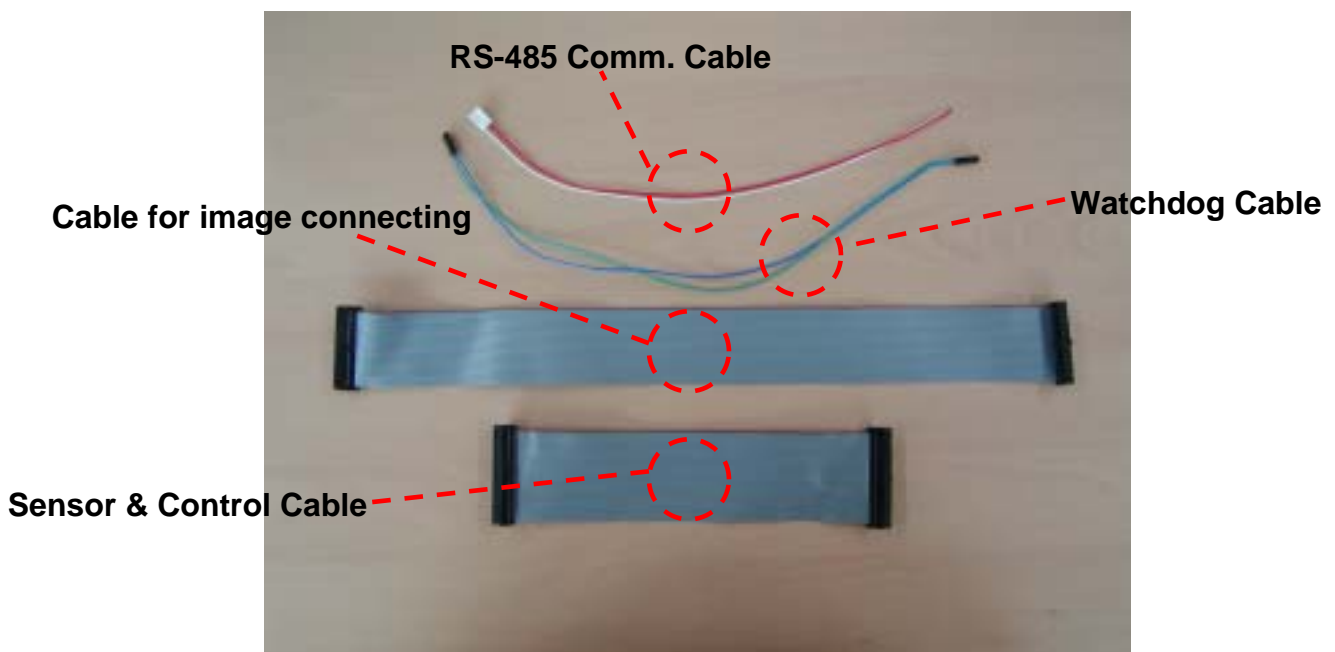


Figure 3-5 Connecting Cables

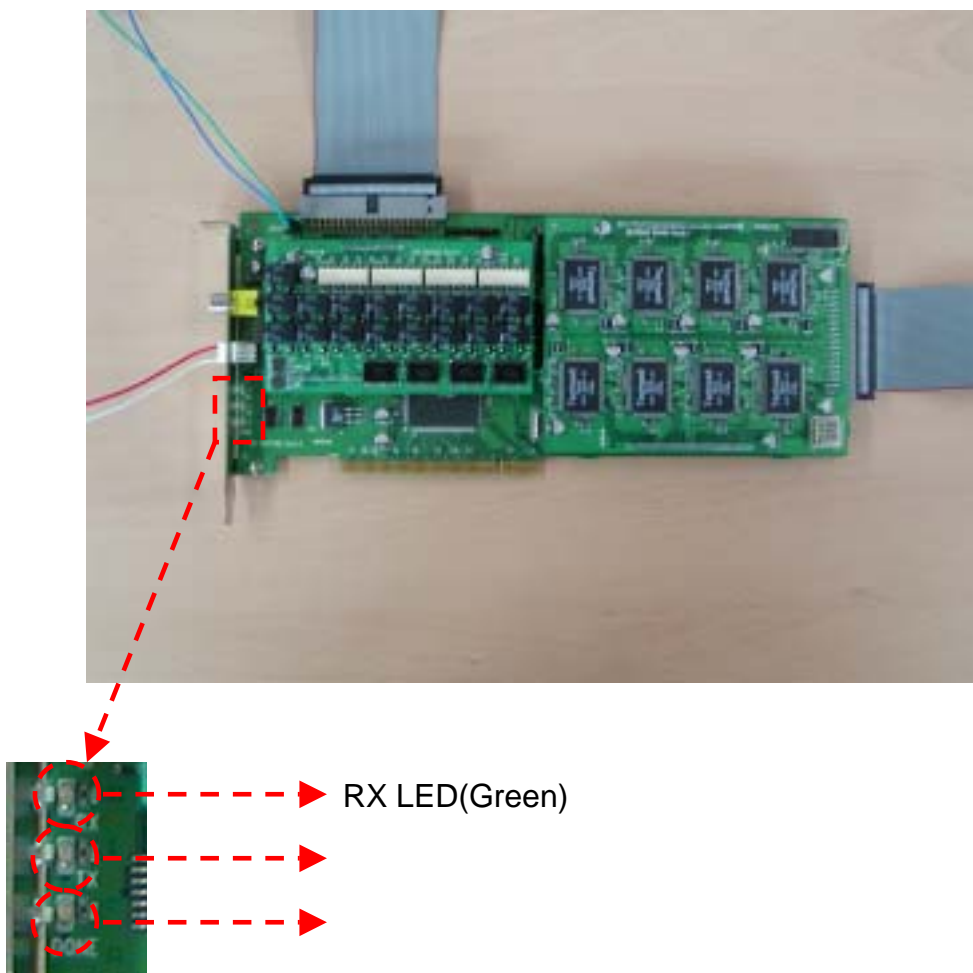


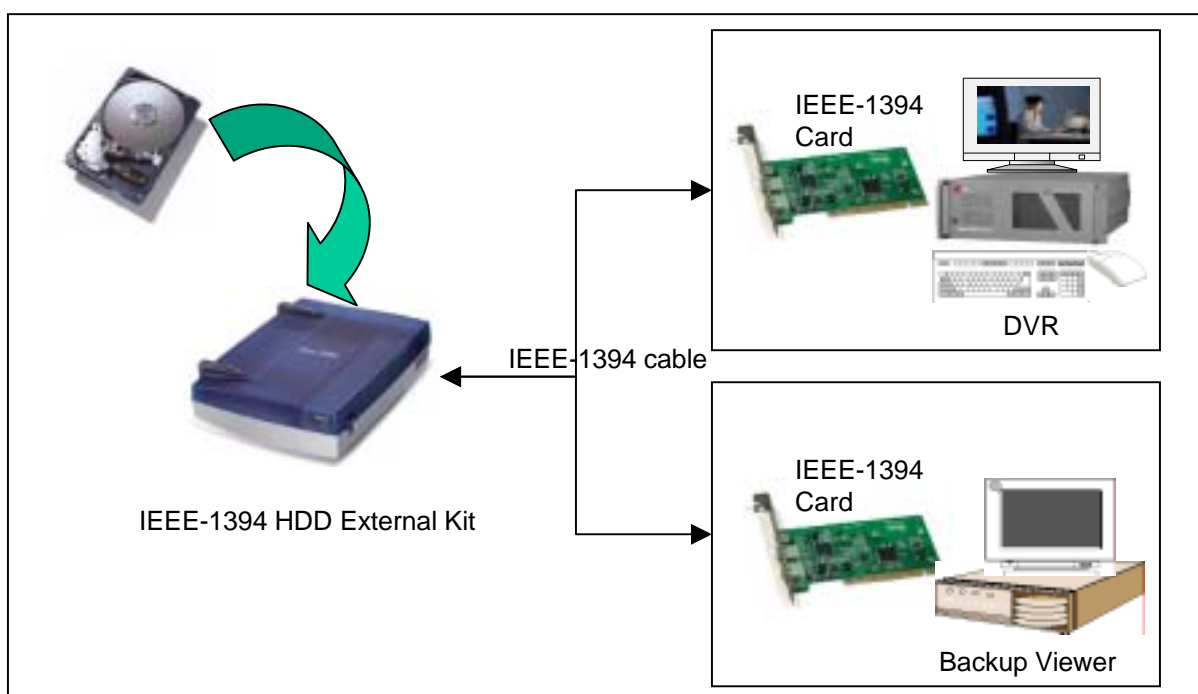
Figure 3-6 After connect each board

4. Backup Storage Setting

With using some backup devices, user can increase efficiency in recording data. As backup devices there are CD-RW, DAT, DVD-RAM, IEEE1394 and verify the stored data by using backup viewer.

4.1 IEEE-1394 Backup Media

4.1.1 IEEE-1394 system architecture



Specification

1. Host Bus : PCI Local Bus, V.2.1
2. Hot-swap supported
3. Device interface : IEEE 1394 (Firewire)
4. Maximum Data transfer rate : 400 Mbps
5. Connector : 2 of 6-pin port
6. Cable : 6pin - 6pin or 6pin - 4pin
7. Dimension (W X D) : 145mmX84mm
8. Operation temperature : 0 C ~ 55 C (10%~90% Humidity)
9. Supported OS : Windows 98SE, Windows ME, Windows 2000, Mac OS 8.6x

4.1.2. IEEE-1394 HDD & Cable Connect to NetSafe-DVR System

Your first IEEE-1394 HDD Kit's USB cable connect to NetSafe-DVR system like as a Fig.1-1. And second kit's USB cable connect to first IEEE-1394 HDD Kit.

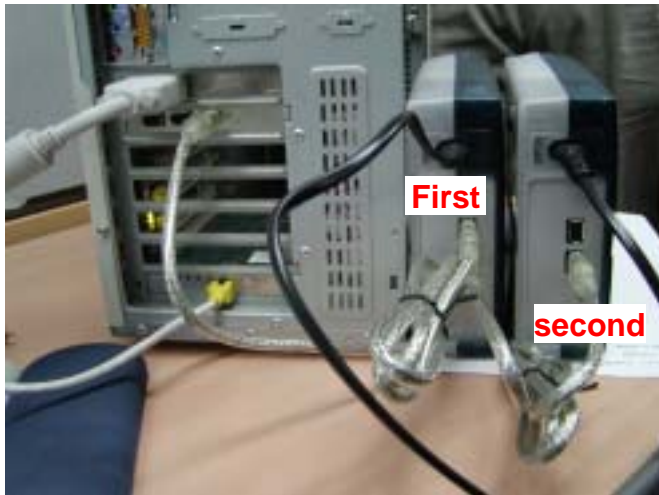


Figure 4-1

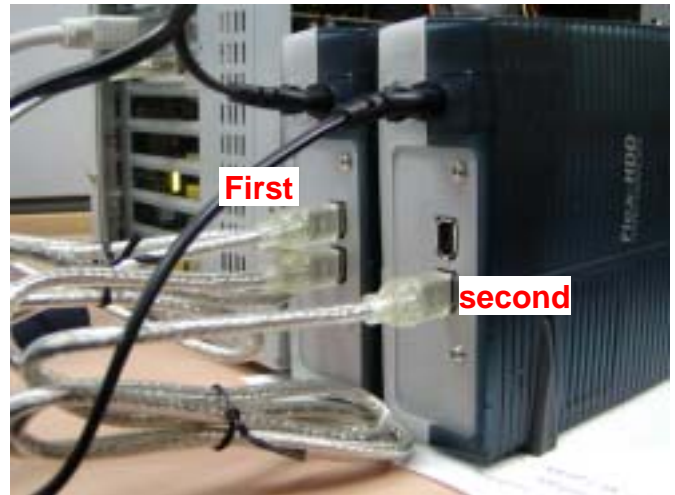


Figure 4-2

4.3. IEEE-1394 HDD Setting for Windows98SE

a. Restart NetSafe-DVR System.

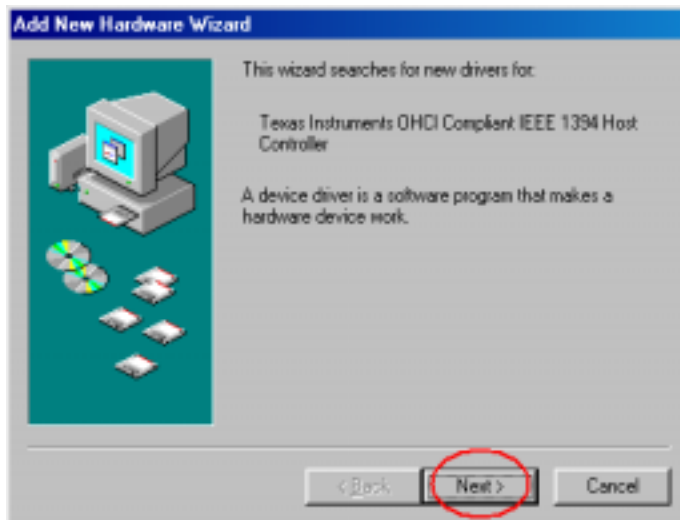


Figure 4-3

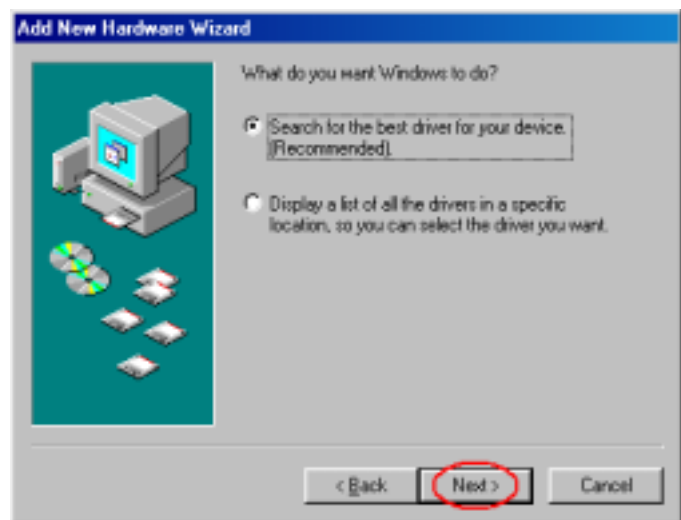


Figure 4-4

b. Insert your IEEE-1394 HDD Driver CD-ROM

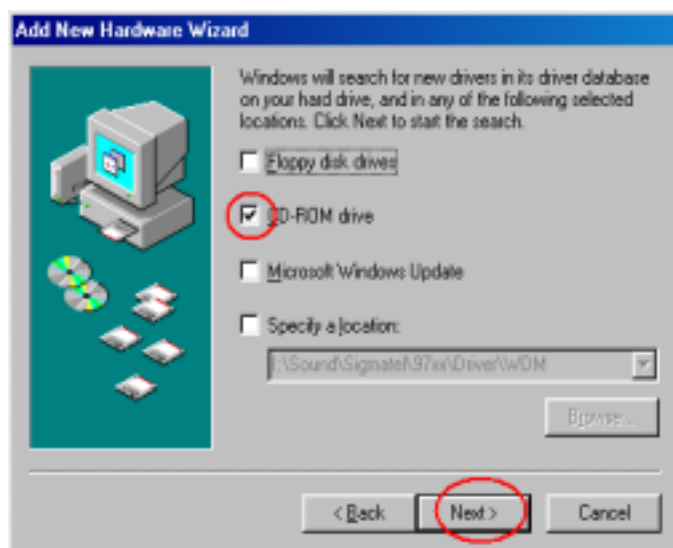


Figure 4-5

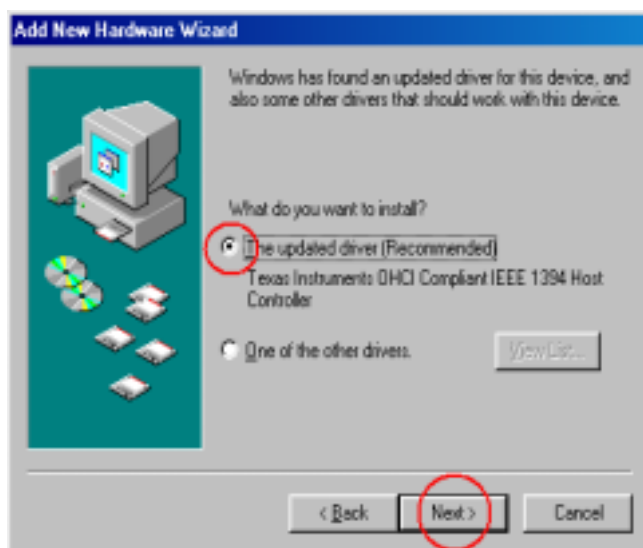


Figure 4-6

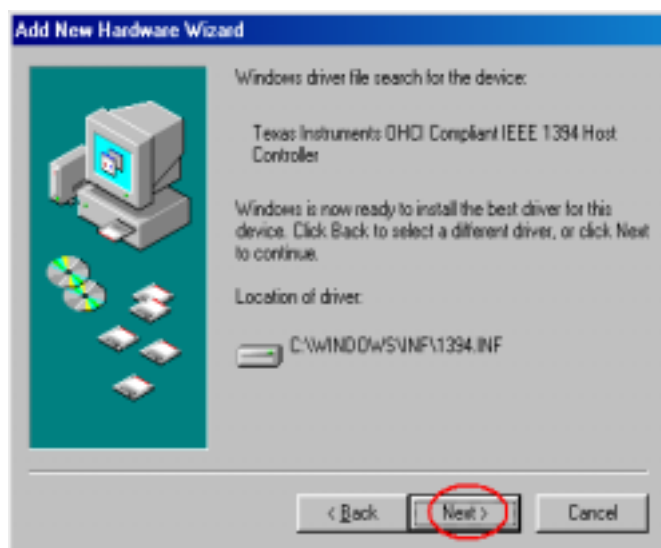


Figure 4-7

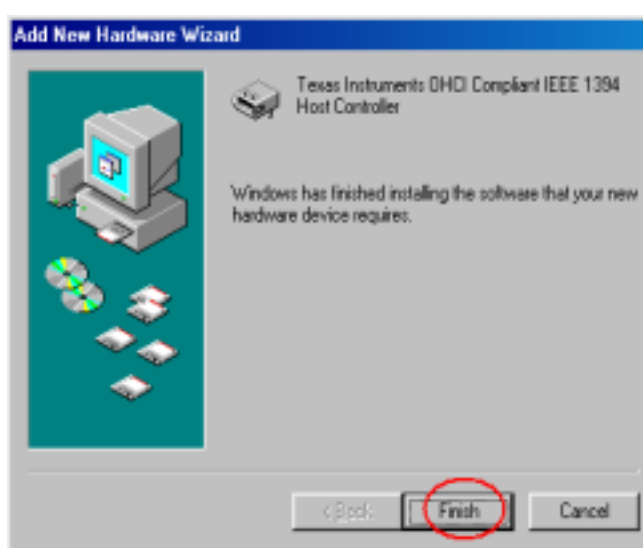
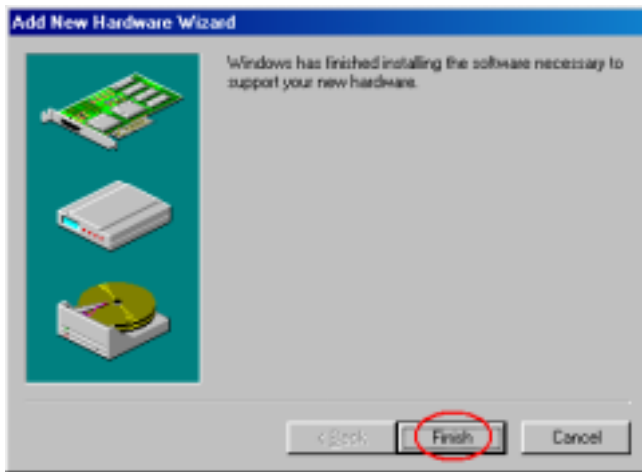
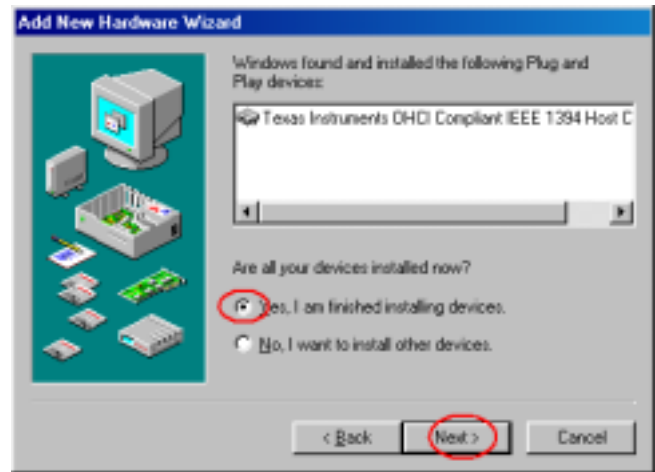
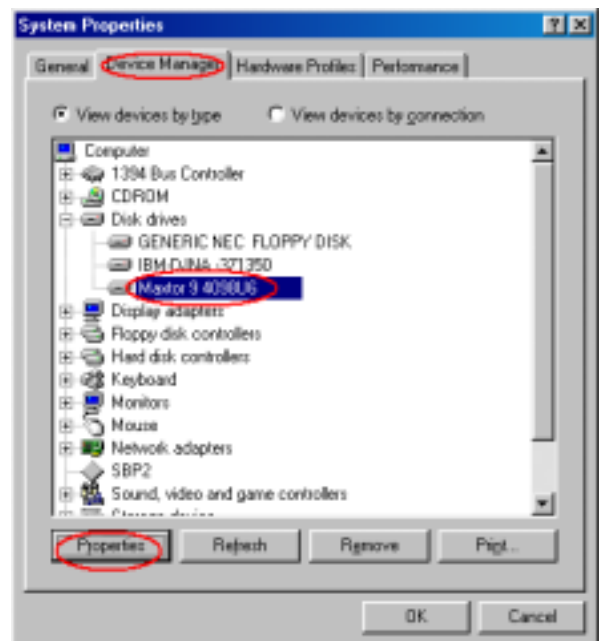


Figure 4-8


Figure 4-9

Figure 4-10

c. **Windows** -> Set your IEEE-1394 HDD as "Removable Drive"

* Control Panel -> System -> IEEE-1394 HDD's Properties


Figure 4-11

Figure 4-12

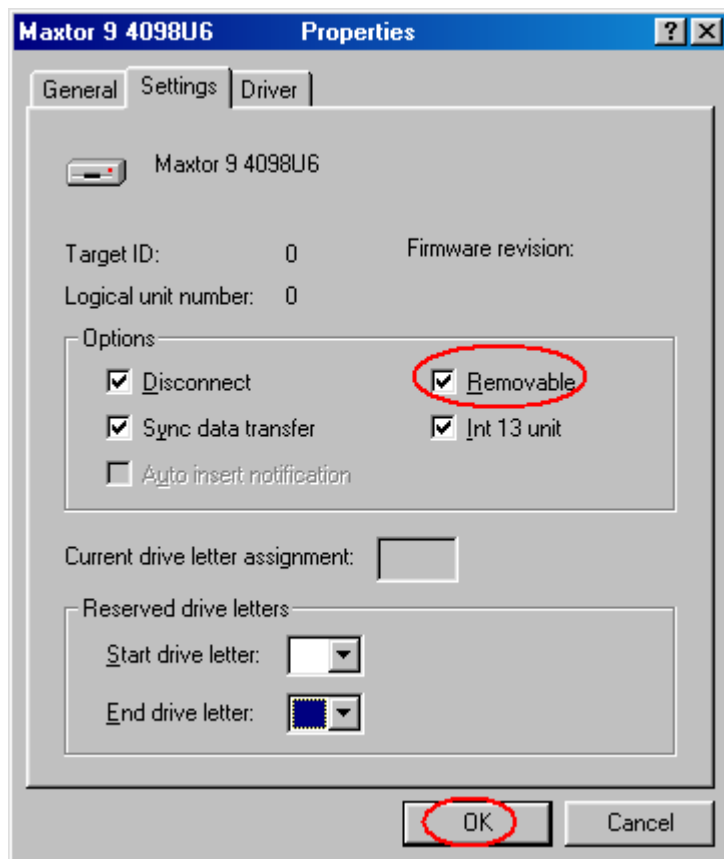


Figure 4-13

Checked 'Removable' option, and click OK. Then restart your System.

d. **Windows2000Professional**

- * Explorer -> IEEE-1394 Volume Label name -> Rename 'backup'
- * Reason : Because Windows2000 professional do not recognize IEEE-1394 as a removable drive and user cannot set HDD as removable by force, NetSafe-DVR S/W recognizes backup drive, if volume label is named 'backup'.

4.2. DVD-RAM Backup Media

4.2.1 DVD-RAM Specification

Specification

Model : LF-D211V

Specification : Built in EIDE/ATAPI , 4.7GB DVD-RAM, 2X/6X/24X

Model Name		LF-D211N(ATAPI)
Data Capacity	DVD-RAM	4.7Gbyte/9.4Gbyte
	DVD-ROM	4.7Gbyte(Single) / 8.5Gbyte(dual)
Interface		ATA/ ATAPI-4
Data Transfer Rate	PIO mode4 Ultra DMA mode2	16.6Mbyte/sec 33.3Mbyte/sec
Data Transfer Rate (Sustained)	DVD-RAM(2.6GB) DVD-RAM(4.7GB) DVD-ROM CD-ROM	1,385Kbyte/sec 2,770Kbyte/sec Max 8,310 Kbyte/sec(6X) Max 3,600 Kbyte/sec(24X)
Error Rate	DVD-RAM DVD-ROM	Less than 10-12 Less than 10-12
Power Requirements	Voltage	DC +5V DC +12V
Environmental Temperature	Operating Storage	5~45C -20~50C
Relative Humidity	Operating Storage	10~80% 5~90%
Dimensions		146.0(W) x 41.3(H) x 196(D) mm

4.2.2 DVD-RAM Test

Testing Environment

* System Environment

- CPU : Intel Pentium III 866MHz, RAM : 128MB SDRAM
- Mother Board : GA-60XE(Intel 815EP), HDD : Segate 60GB,
- Graphic card : ATI rage 128Pro
- OS : Windows2000Professional

* NetSafe-DVR recording Environment

- 16CH, Normal, 5 Frame/Sec
- 2CH : 720x480, 2CH : 720x240, 12CH : 360X240

* Average recording rate of DVD-RAM

Test	Rec. Speed	Playback Speed
152MB(812files)	1.21MB/s	2.3MB/s
112MB(3files)	1.24MB/s	2.38MB/s

4.2.3 DVD-RAM Backup Test

5Frame/sec	NetSafe-DVR recording capacity	DVD-RAM recording capacity
1 Hour	3,442,953,829bytes(3.5GB)	3,694,198,784bytes(3.7GB)
24 Hours	82,630,891,896bytes(83GB)	88,660,770,816bytes(89GB)

Table 4-1 Recording capacity when there are a lot of motion.

* These records based on recording capacity in surveillance mode when there are **a lot of movements**.

* 60GB HDD : C(system,3GB), D(11GB), E(11GB), F(11GB), G(11GB), H(11GB), I(DVD-RAM. 4.7GB)

- DVD-RAM 4.7GB backup -> 1 hour 16 minutes required.
- Backup is performed unit of hour by backup media. When HDD's partition is divided like above, about 3 hours' data will be saved at each partition. So, it takes about 3 hours to backup a partition.

* Recording capacity on **a few movement** -> about 2.5 GB /1 hour

5Frame/sec	NetSafe-DVR recording capacity	DVD-RAM recording capacity
1 Hour	2,262,625,971bytes(2.3GB)	3,694,198,784bytes(3.7GB)
24 Hours	54,303,023,304bytes(55GB)	88,660,770,816bytes(89GB)

Table 4-2 Recording capacity test on minor movement change.

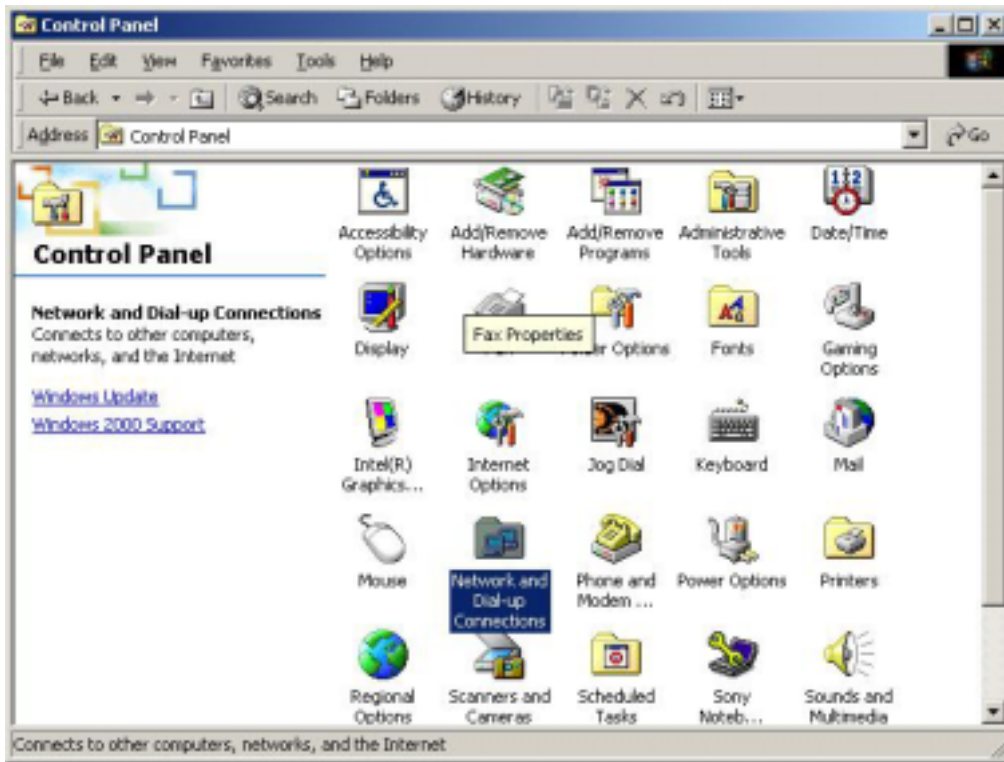
* NetSafe-DVR recording environment is same as when there is a lot of movement.

* 60GB HDD : C(system, 3GB), D(11GB), E(11GB), F(11GB), G(11GB), H(11GB), I(DVD-RAM. 4.7GB)

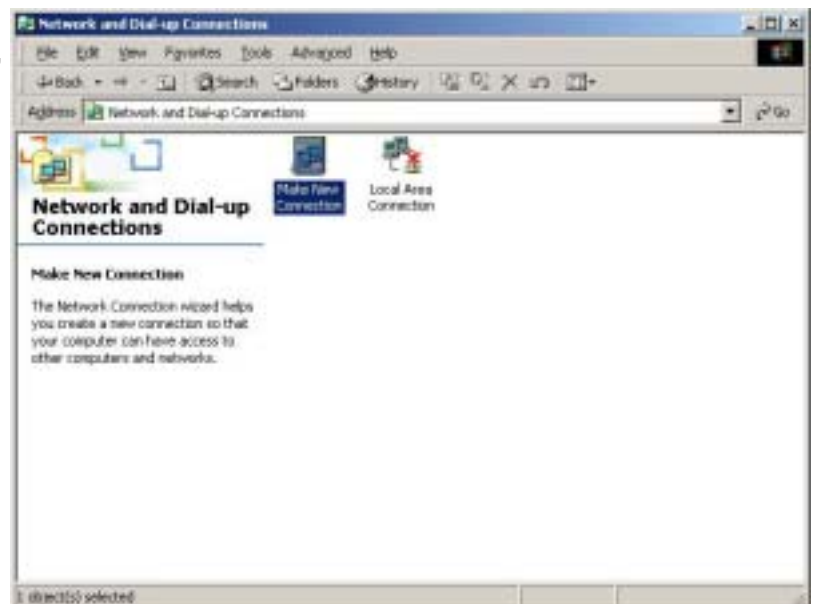
- DVD-RAM 4.7GB backup -> 1 hour 16 minutes required
- Hourly backup is performed by backup media. With using 4.7 GB backup media, you can store 2 hours data.
- About 5 hours' data can be stored at each partition, it takes about 3 hours to backup a partition.

5.2.4. Make a Dial up Connection

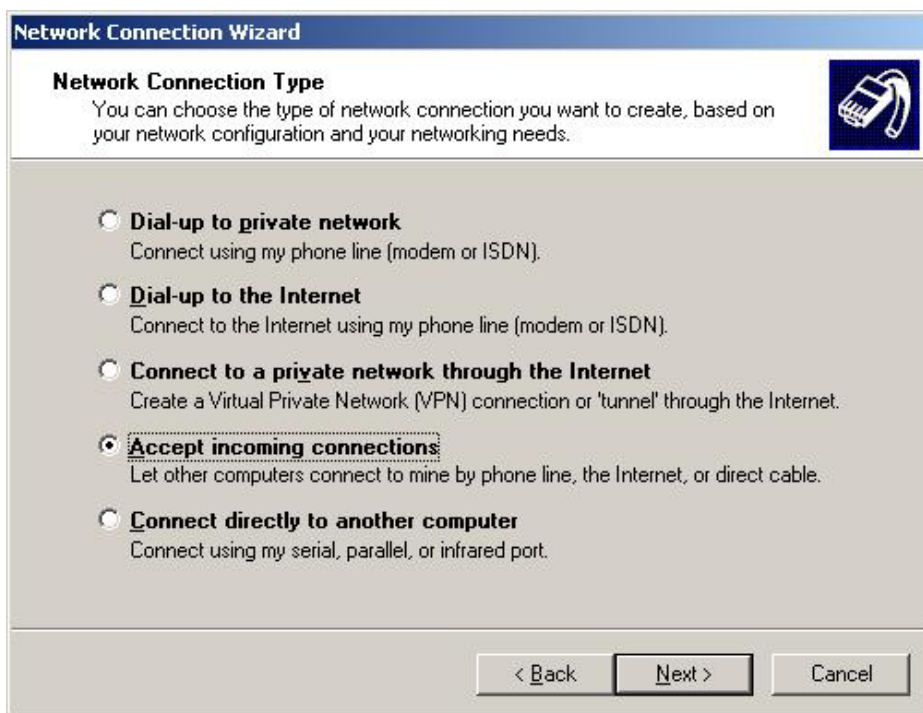
1. Choose a 'Network and Dial-up Connections' at Control Panel



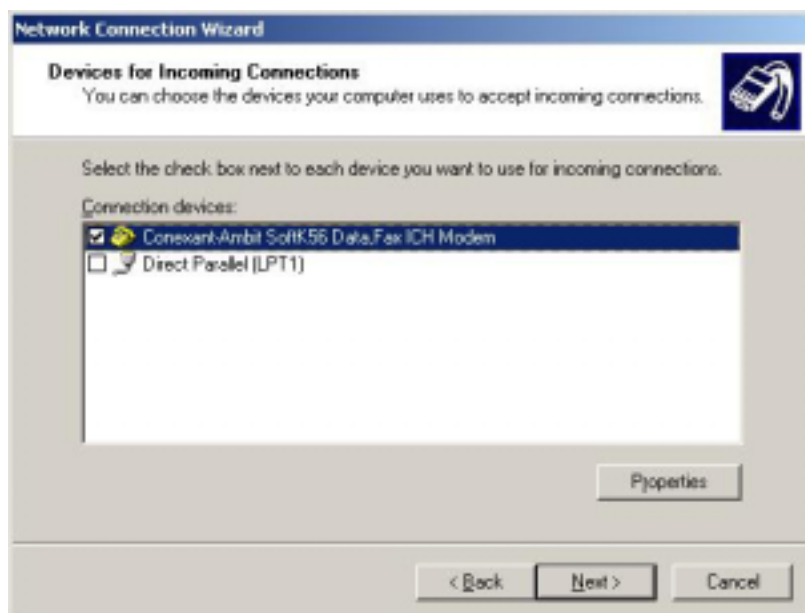
2. Choose 'Make a New Connection'



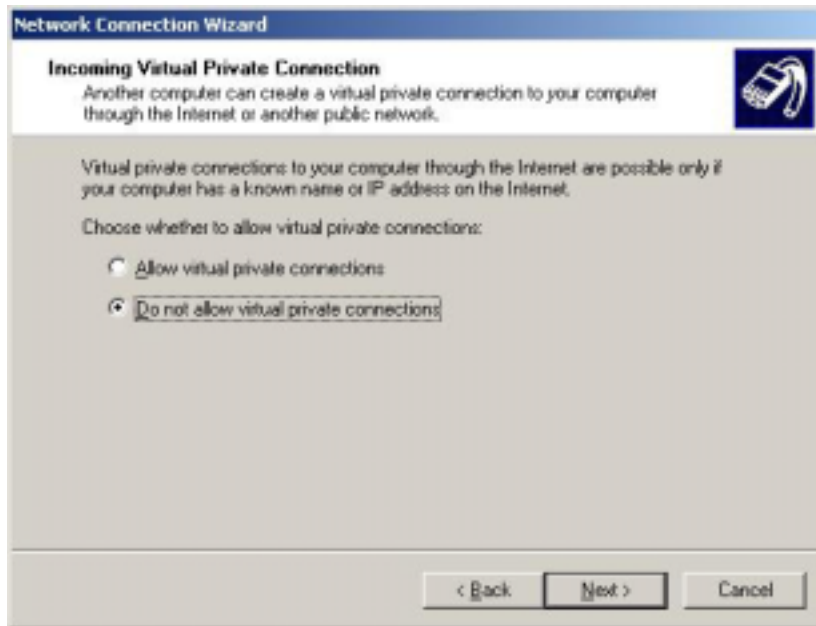
3. Choose 'Accept Incoming Connections'



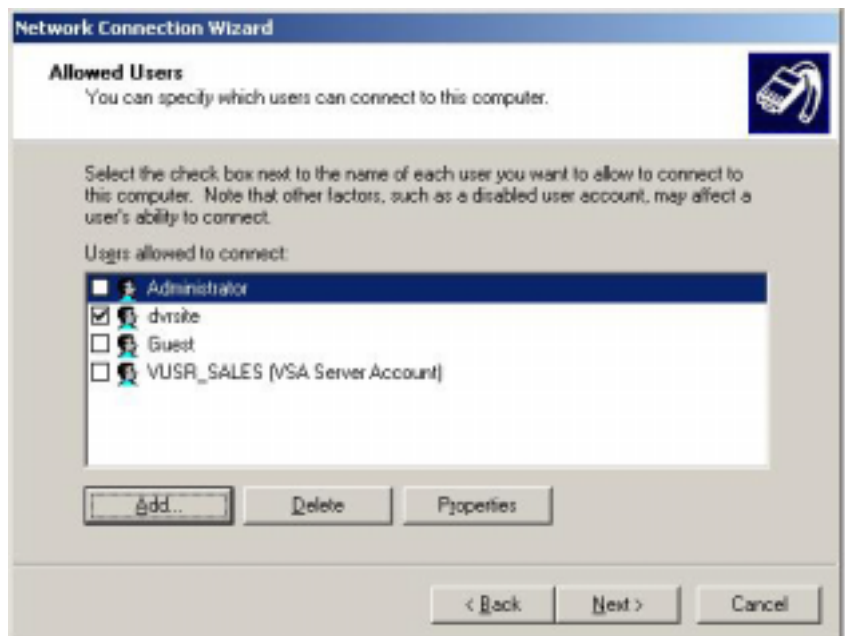
4. Choose the device you could use in your computer. If devices installed correctly, All list are shows on the box



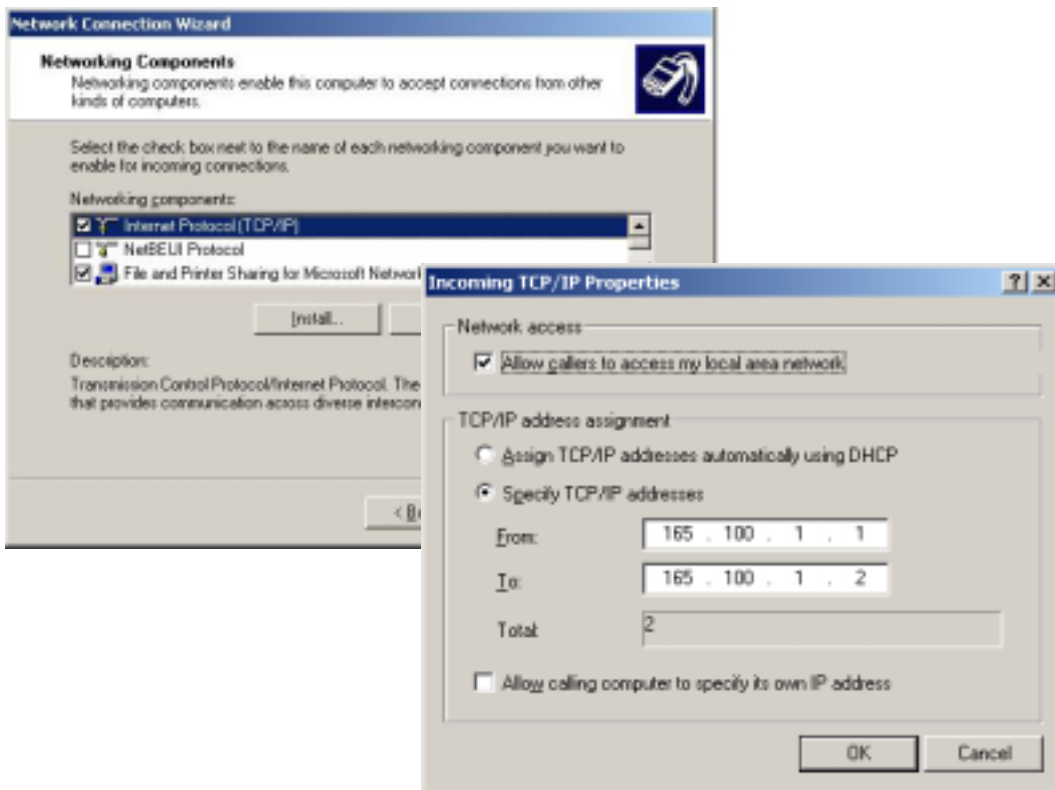
5. Choose 'Do not allow virtual private connections'



6. Add allowed users using 'Add' Button. User name must be "dvrsite"
 - User name must be 'dvrsite'.



7. After choose Network component, set the property correctly.



8. Connection Wizard finished. Name the connection you made.

